

FIG. 1

FIG. 1

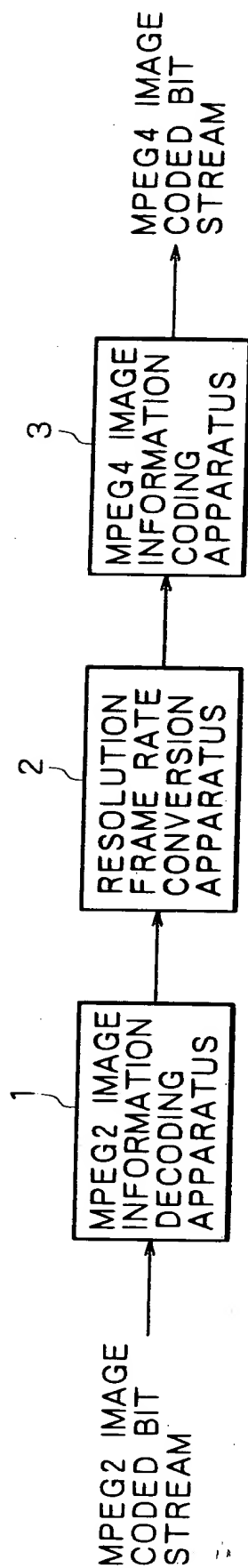


FIG. 2

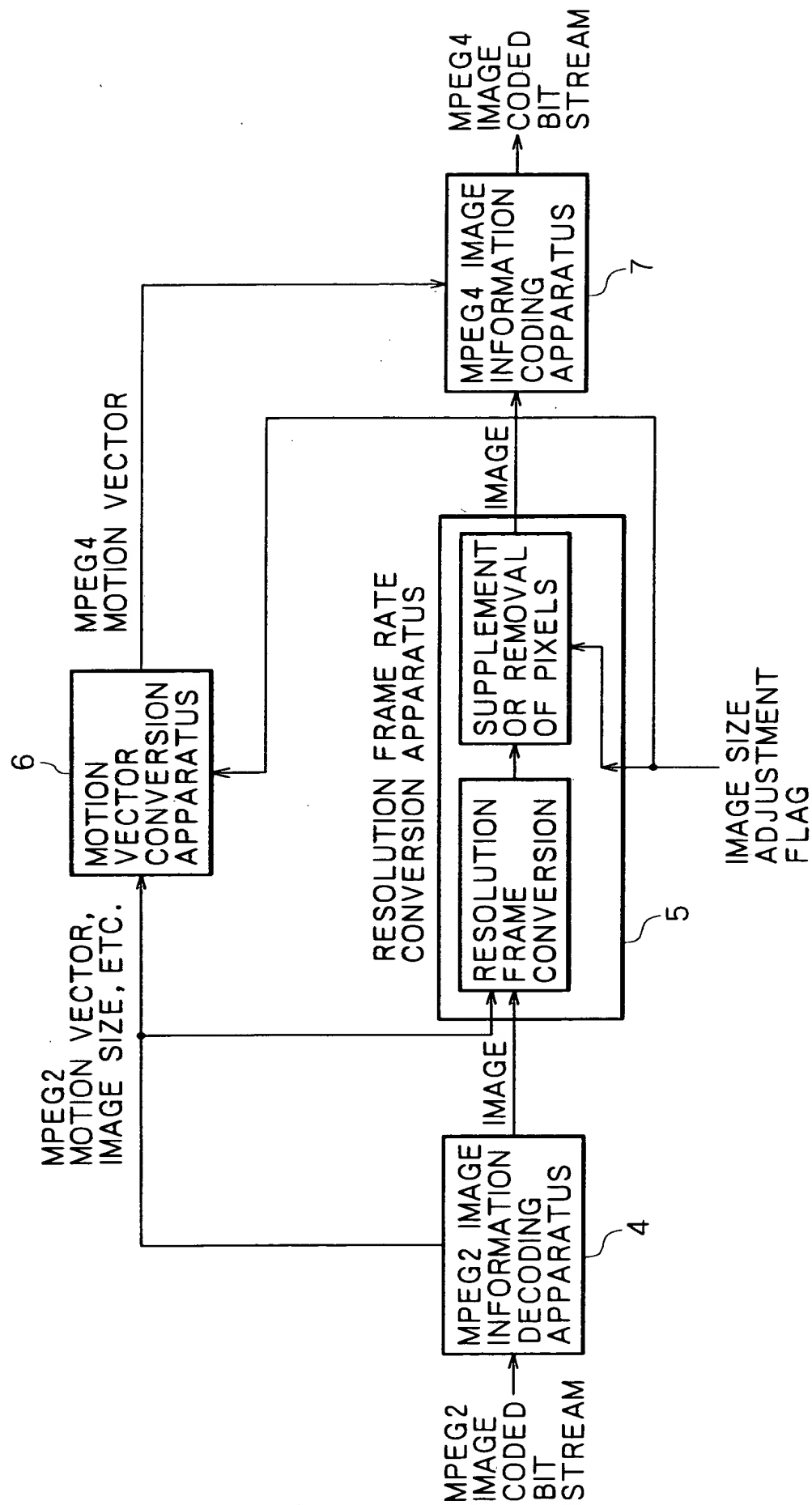


FIG. 3A

POSITION IN PRECEDING FRAME
IS INDICATED WITH SCREEN

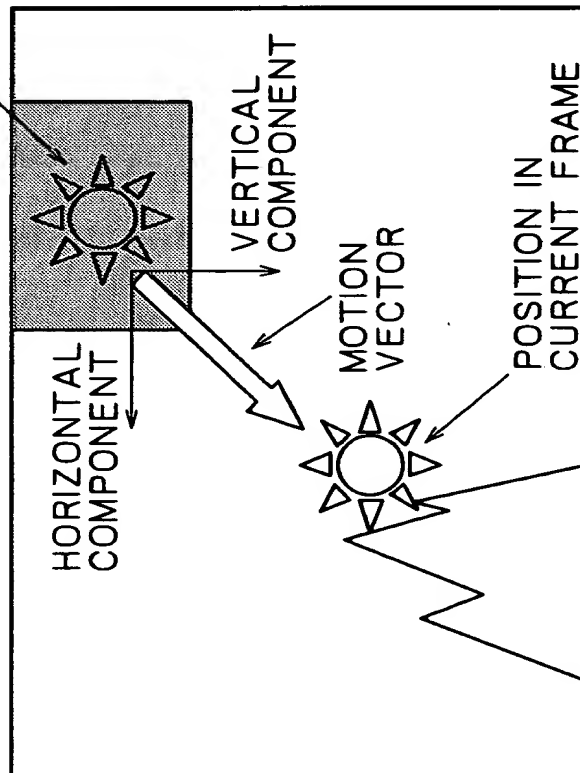
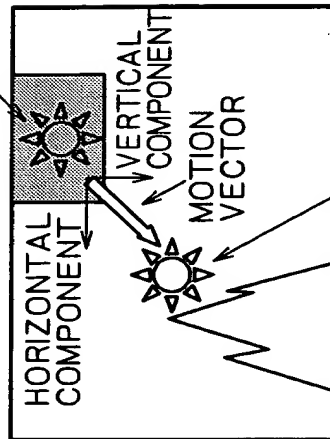


FIG. 3B

POSITION IN PRECEDING FRAME
IS INDICATED WITH SCREEN



POSITION IN
CURRENT FRAME

FIG. 4

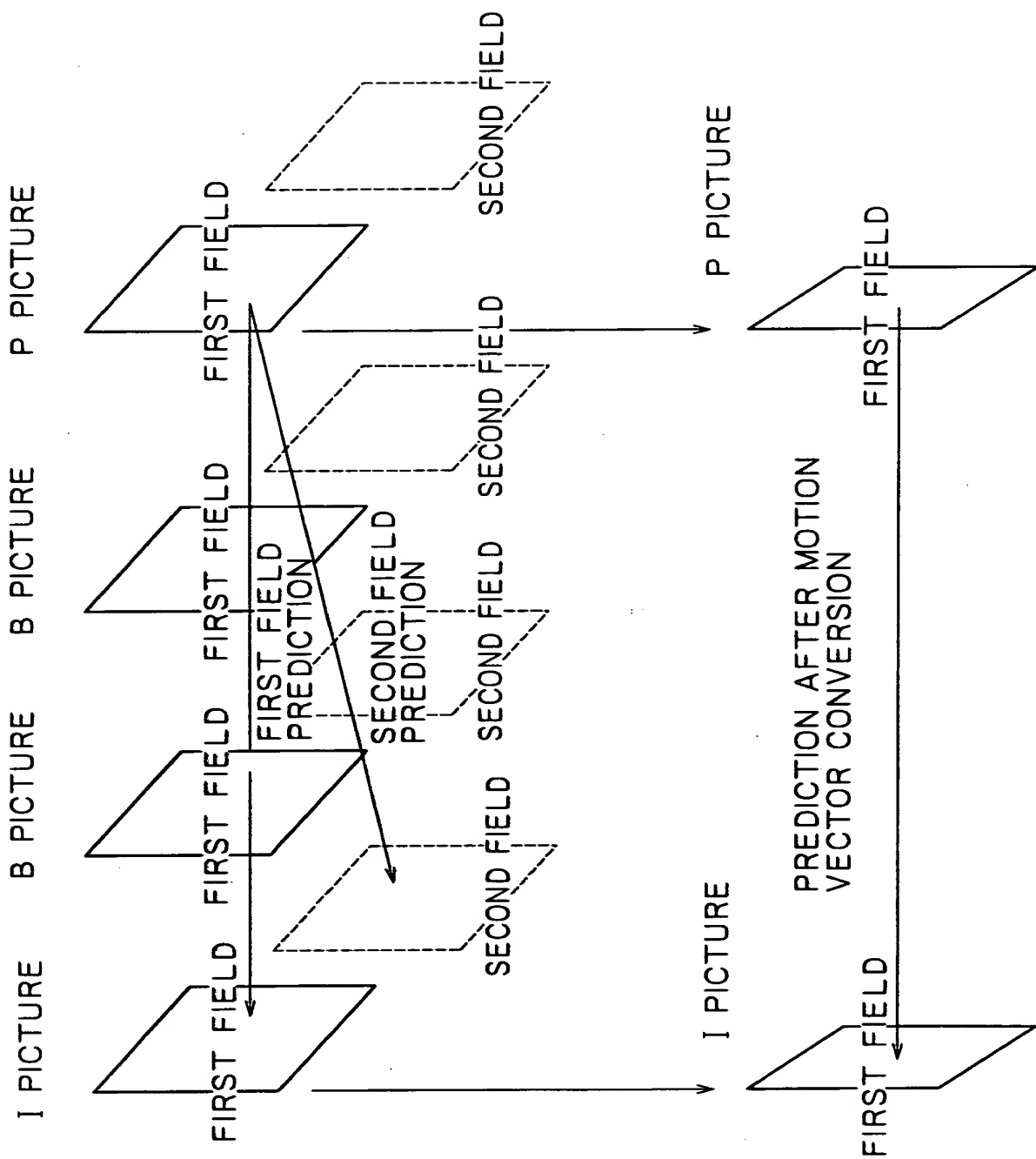


FIG. 5

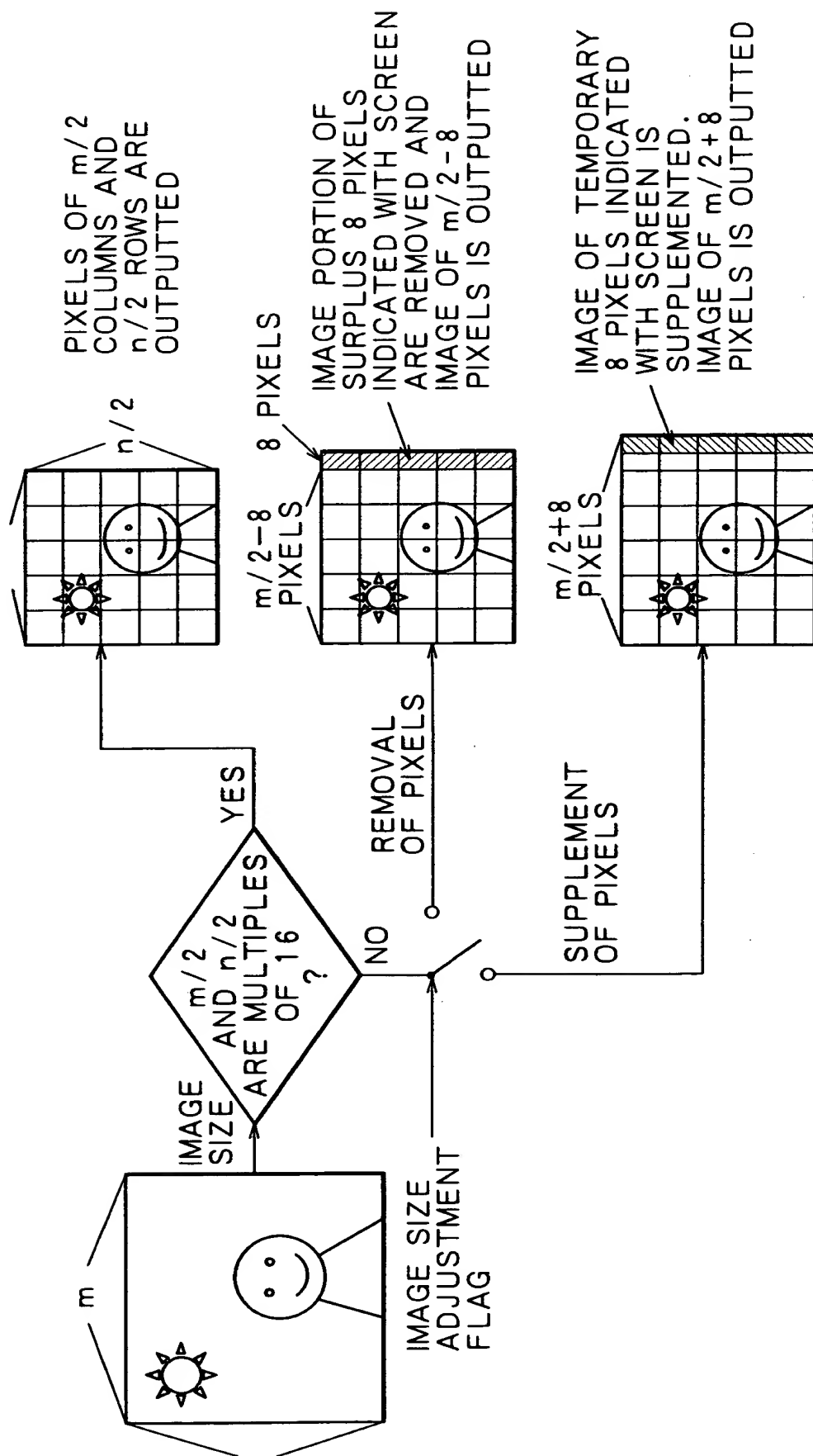
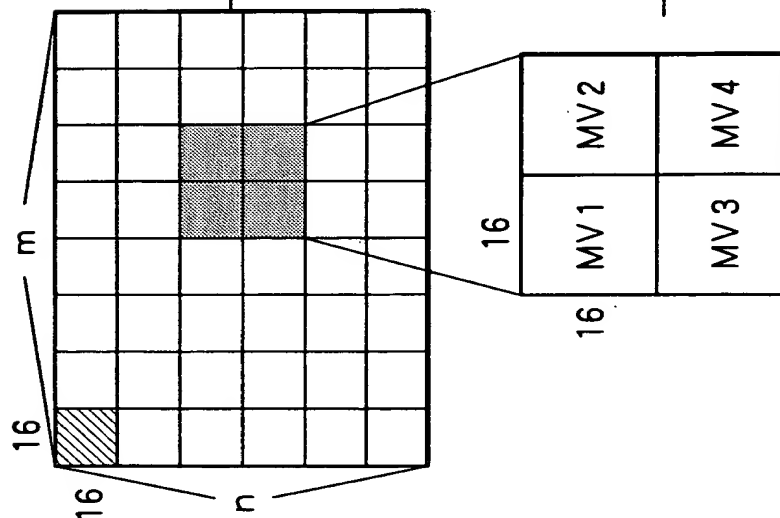


FIG. 6A

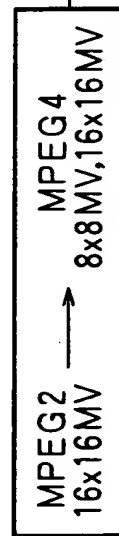
IMAGE DECODED BY MPEG2
DECODING SYSTEM



BEFORE RESOLUTION
CONVERSION

RESOLUTION
FRAME RATE
CONVERTER

CONVERSION



AFTER RESOLUTION
CONVERSION

FIG. 6B

IMAGE CODED BY MPEG4
CODING SYSTEM

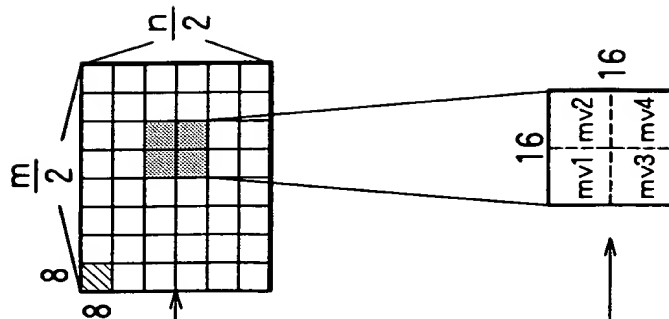


FIG. 7

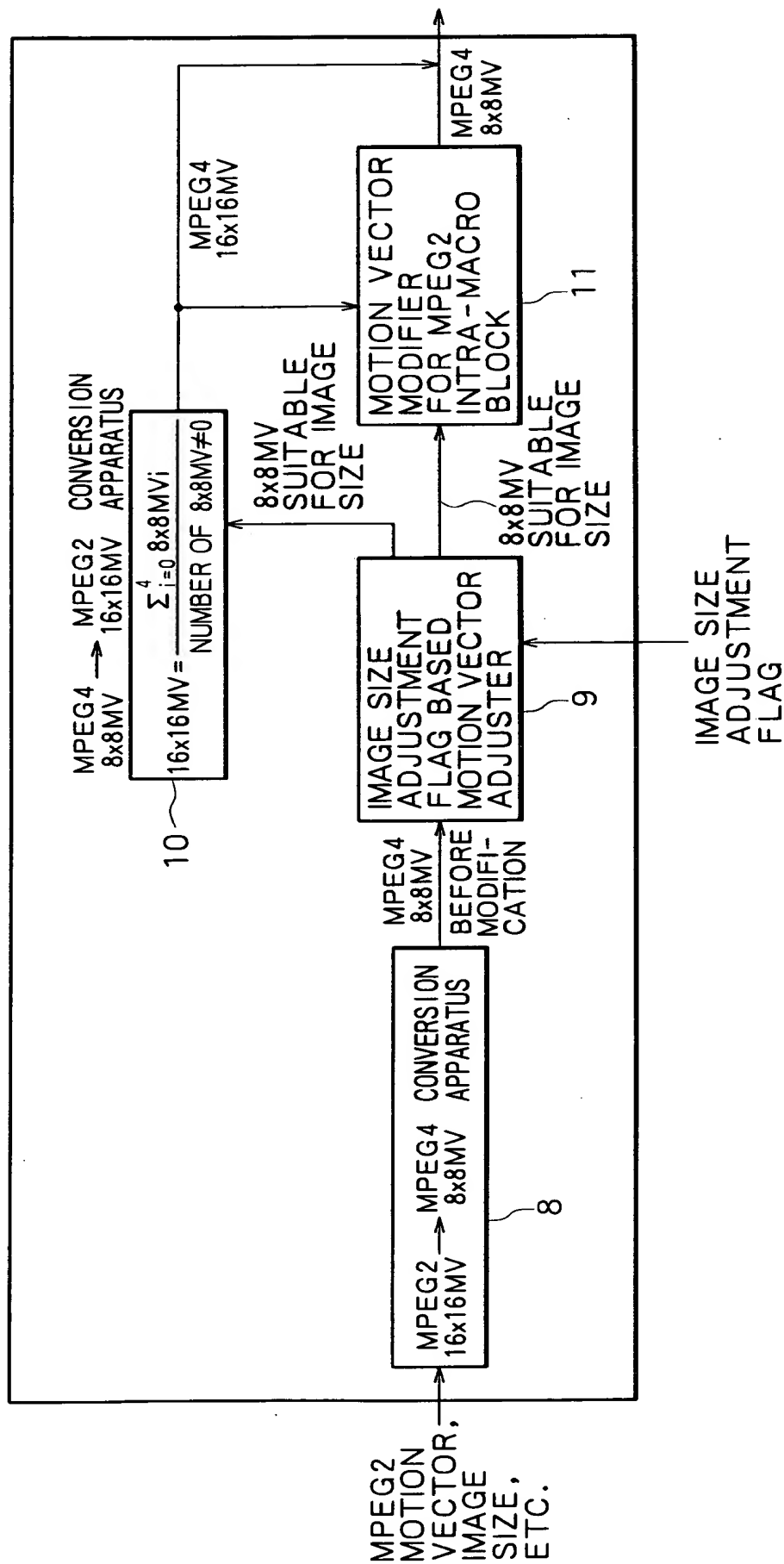


FIG. 8

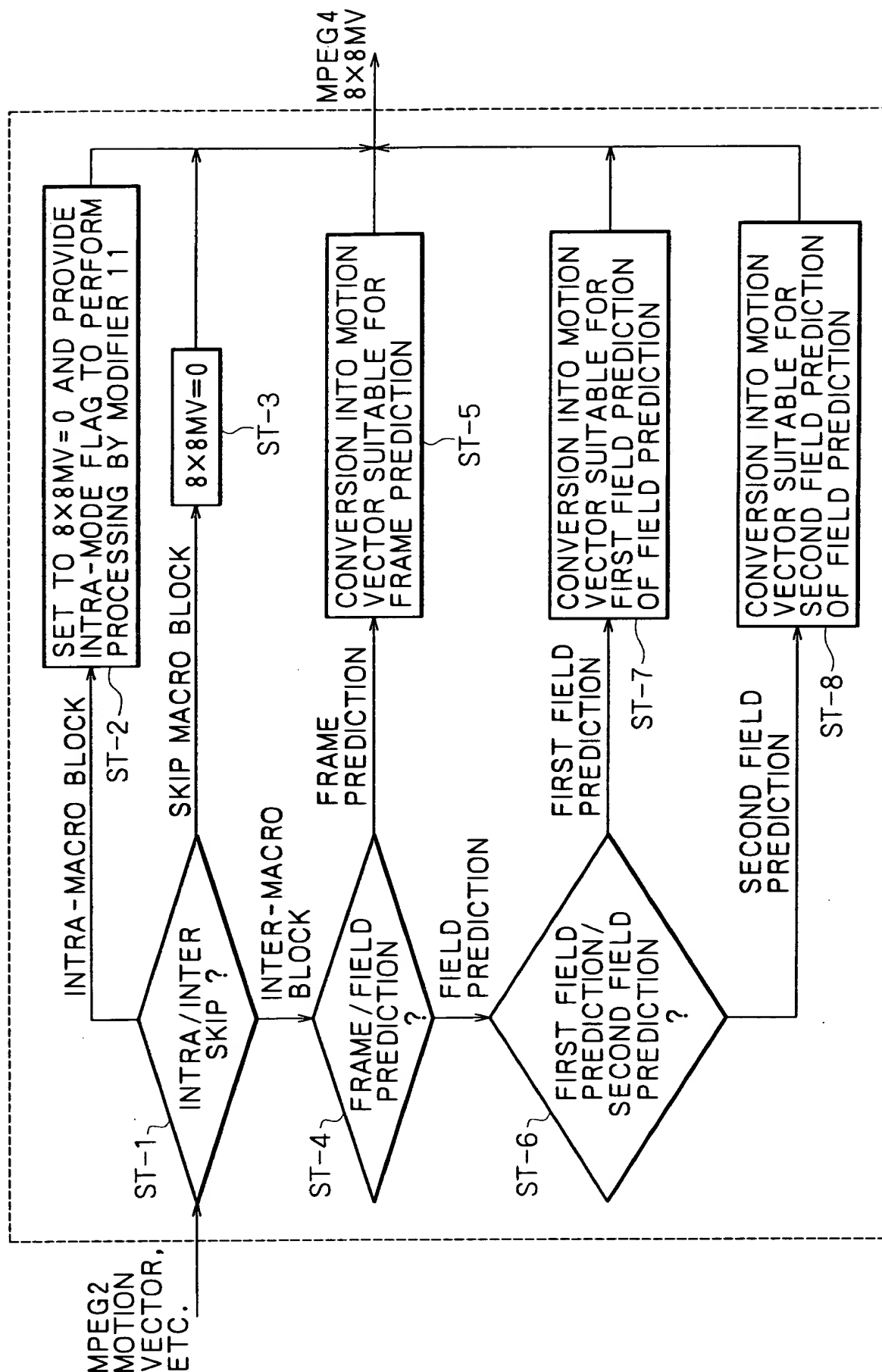


FIG. 9A

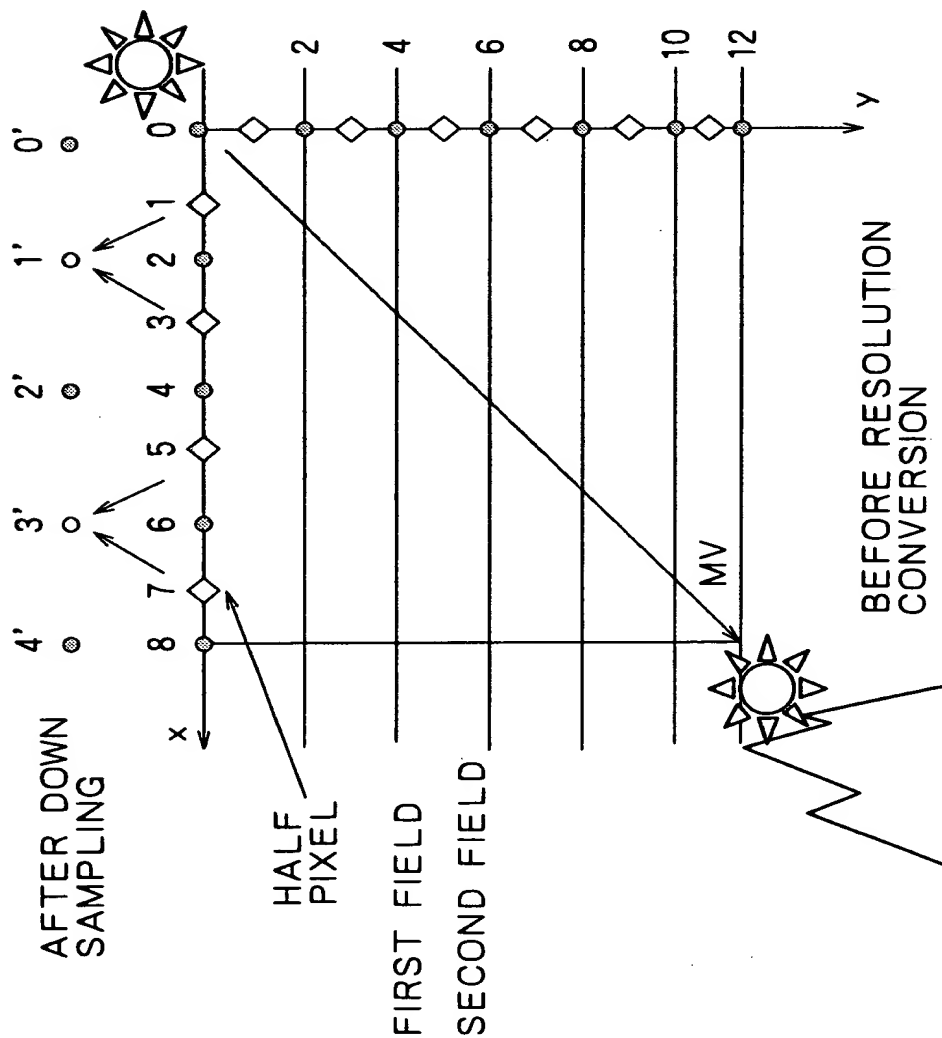


FIG. 9B

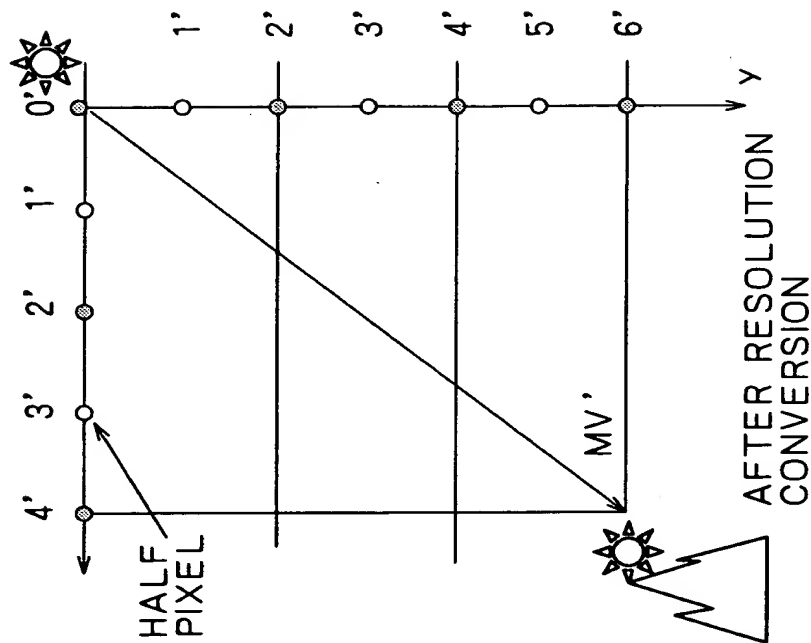


FIG. 10

REMAINDER WHEN MOTION VECTOR MV BEFORE CONVERSION IS DIVIDED BY 4	0	1	2	3
MOTION VECTOR AFTER CONVERSION	$[MV/2]$	$[MV/2] + 1$	$[MV/2]$	$[MV/2]$

$[MV/2]$ REPRESENTS INTEGER
PART WHEN MV IS DIVIDED BY 2

FIG. 11A

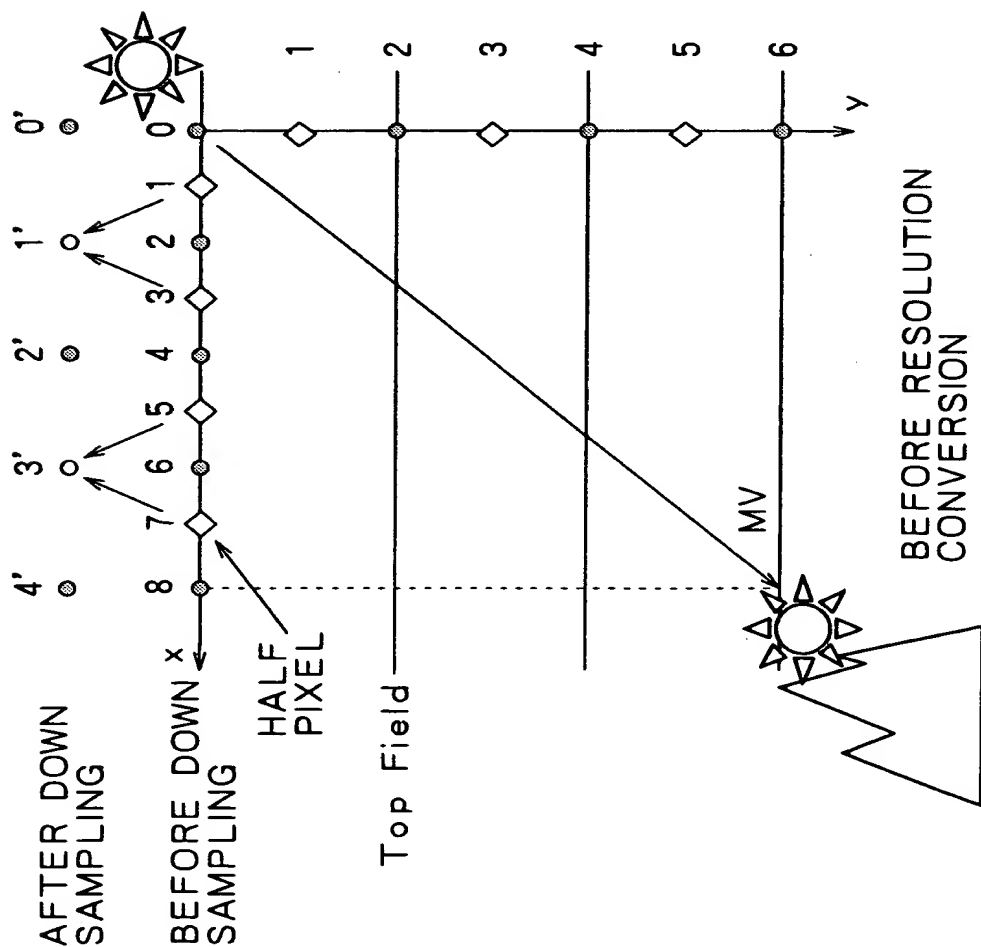
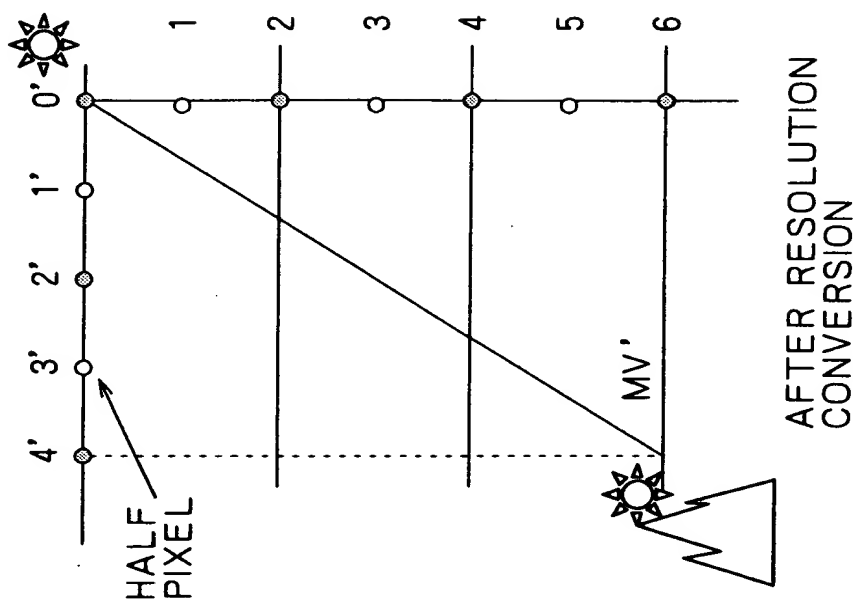


FIG. 11B

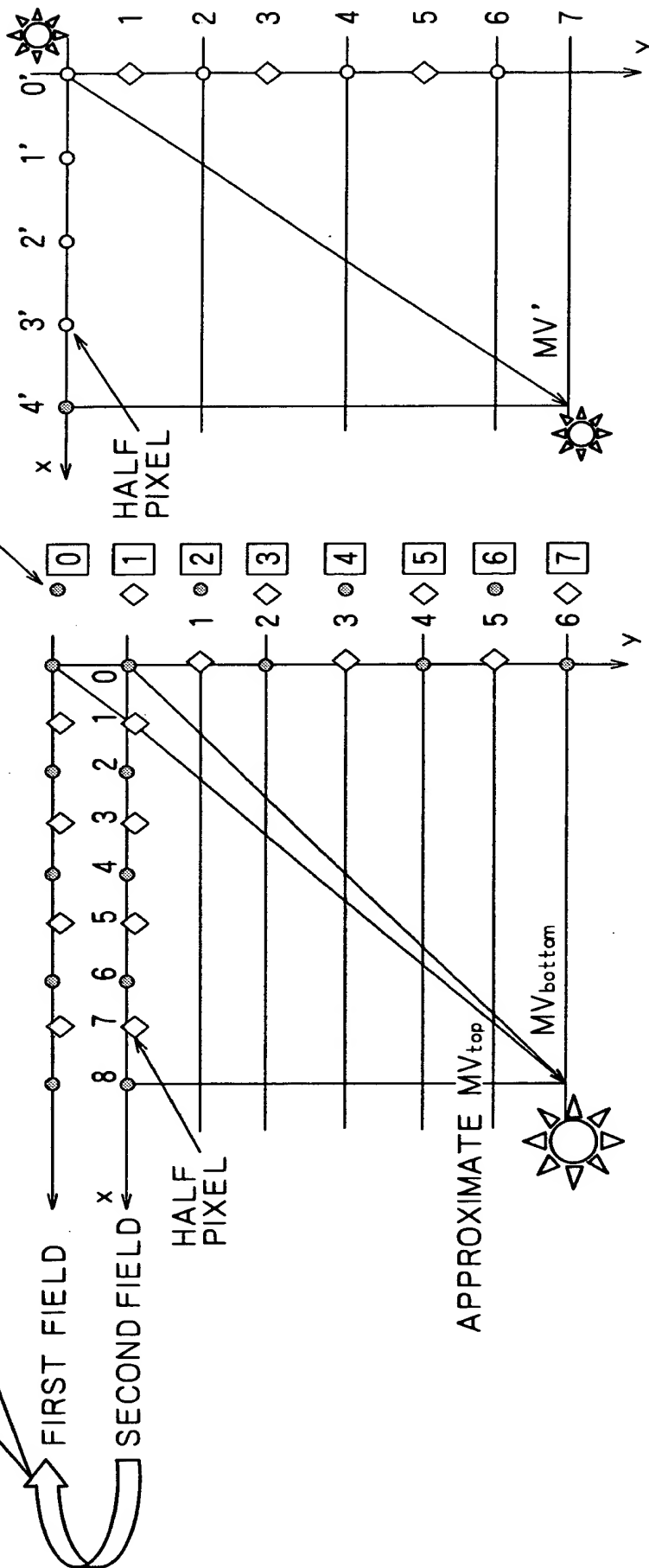


SINCE IMAGE ONLY OF EXTRACTED FIRST FIELD IS INPUTTED TO MPEG4 IMAGE CODING APPARATUS, FIRST IMAGE FIELD IS USED AS REFERENCE, 1 IS ADDED TO VERTICAL COMPONENTS OF MOTION VECTORS UPON PREDICTION OF SECOND FIELD OF MPEG2 TO APPROXIMATE SECOND FIELD TO FIRST FIELD

FIG. 12A

FIG. 12B

VERTICAL COMPONENT OF MOTION VECTOR AFTER MODIFICATION



BEFORE RESOLUTION CONVERSION

AFTER RESOLUTION CONVERSION

FIG. 13

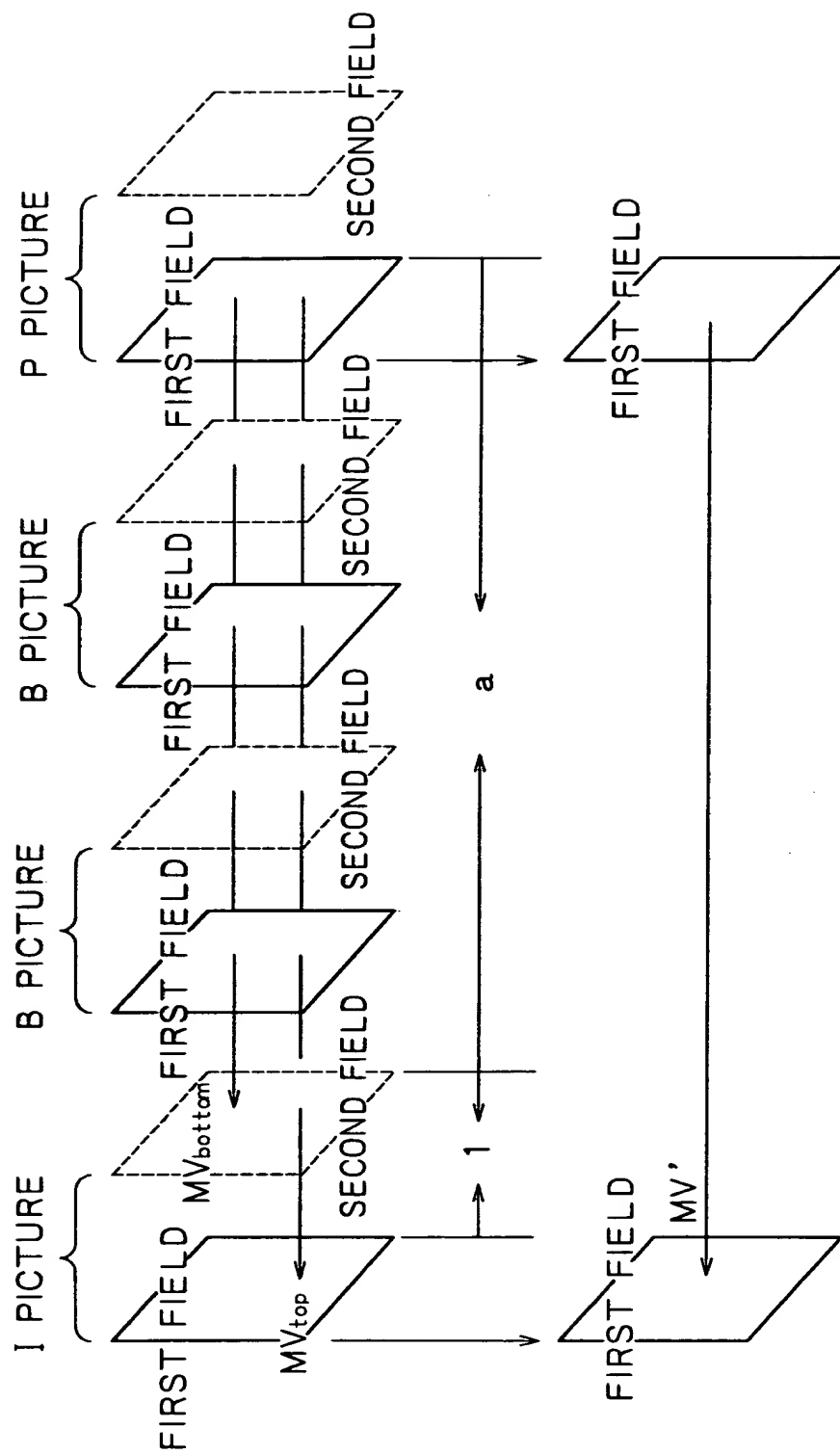


FIG. 14

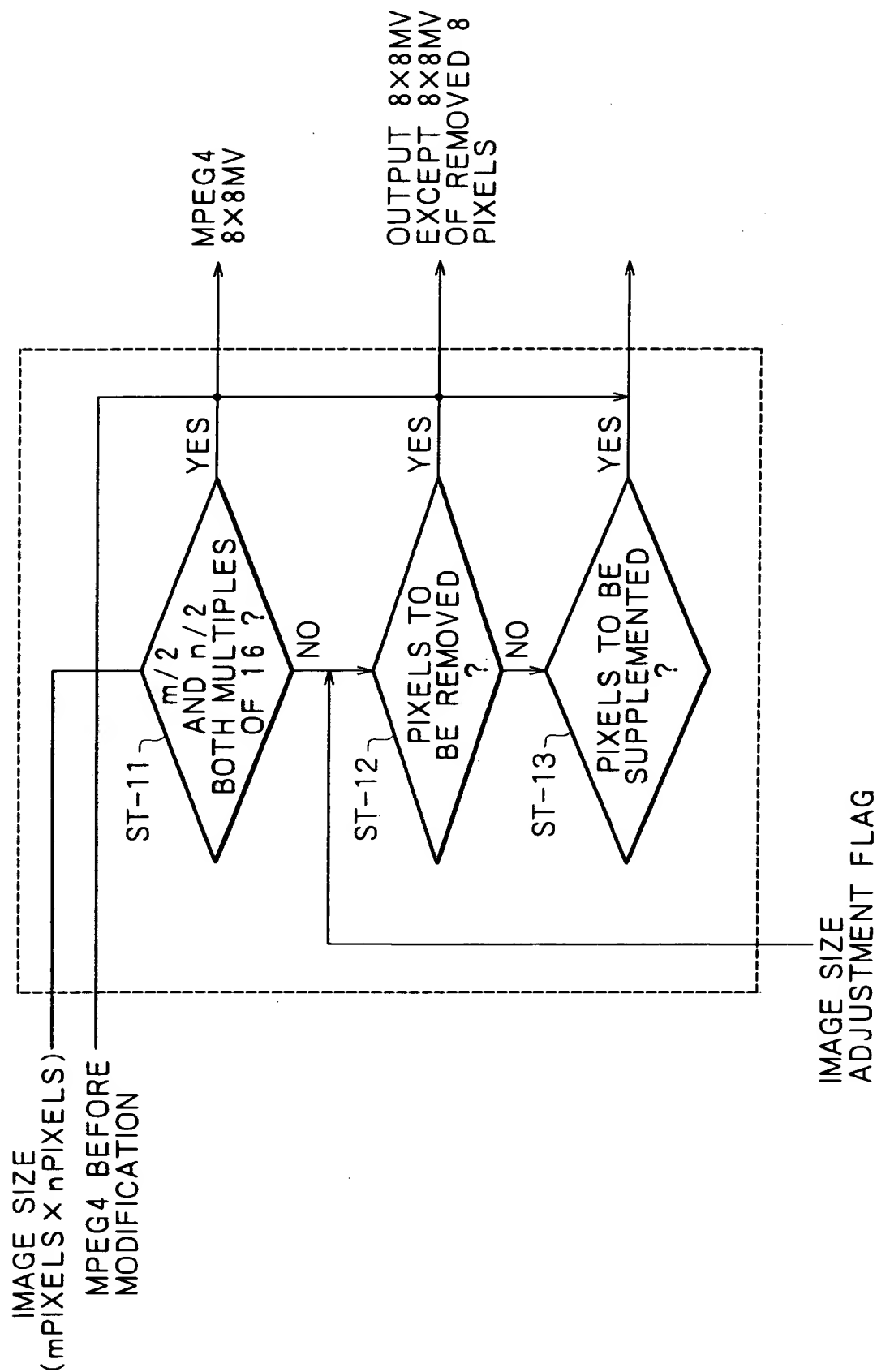


FIG. 15

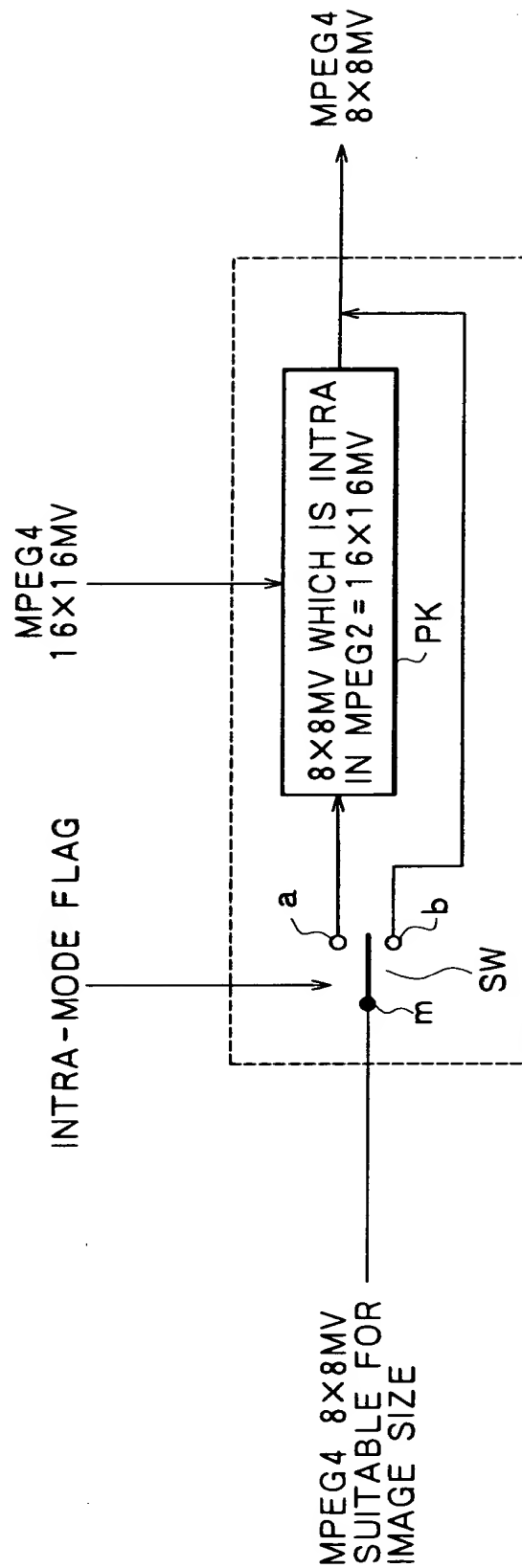


FIG. 16

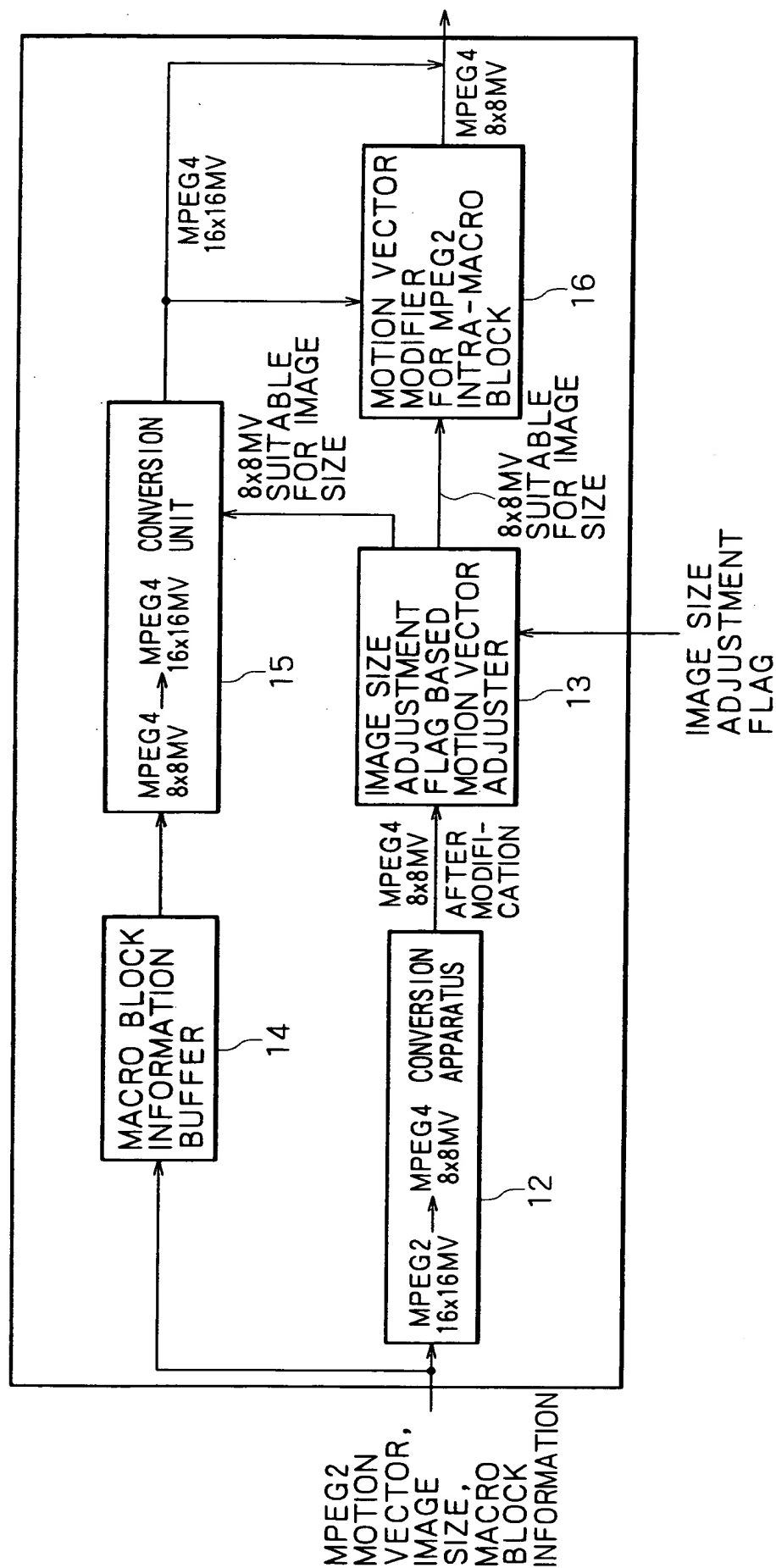


FIG. 17A

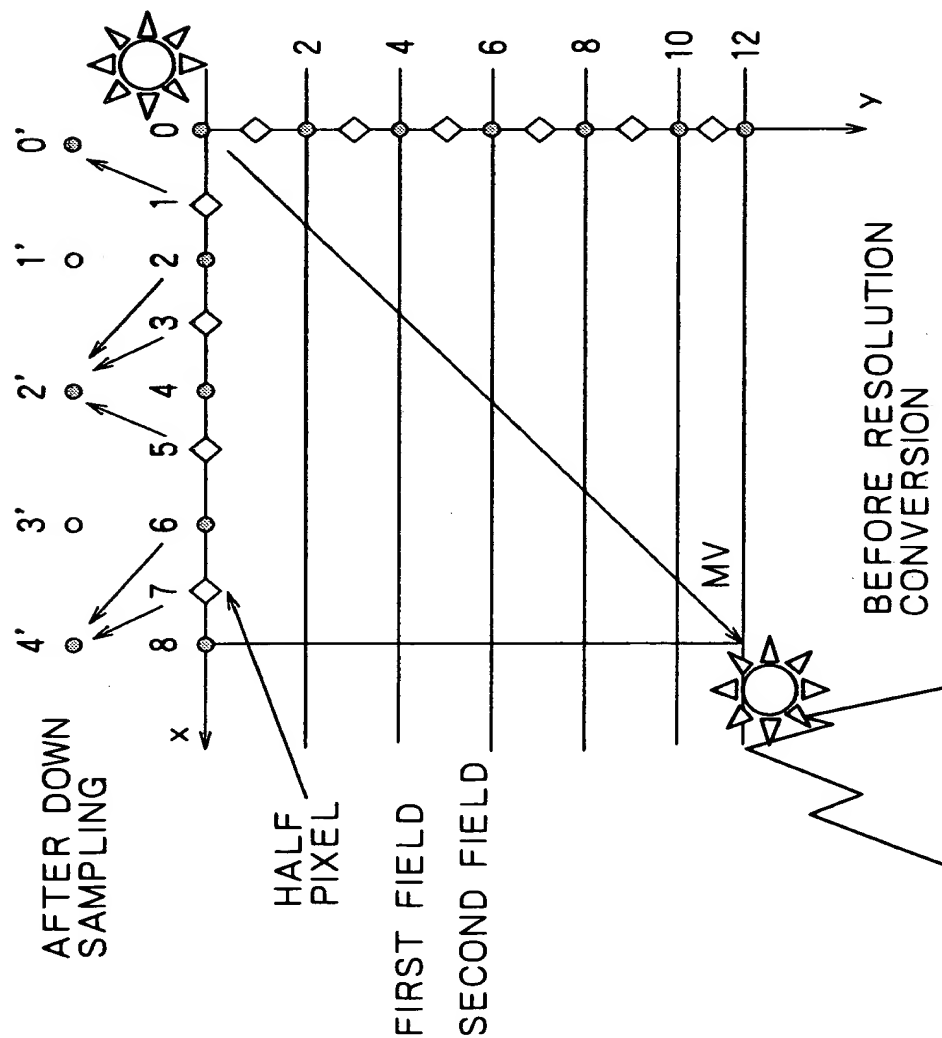


FIG. 17B

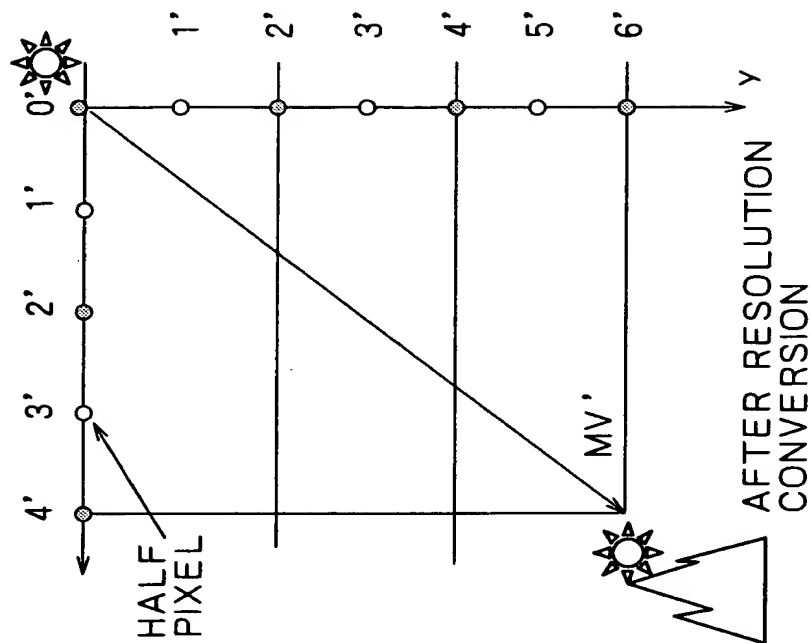


FIG. 18

REMAINDER WHEN MOTION VECTOR MV BEFORE CONVERSION IS DIVIDED BY 4	0	1	2	3
MOTION VECTOR AFTER CONVERSION	$[MV/2]$	$[MV/2]$	$[MV/2] + 1$	$[MV/2]$

$[MV/2]$ REPRESENTS INTEGER PART WHEN MV IS DIVIDED BY 2

FIG. 19A

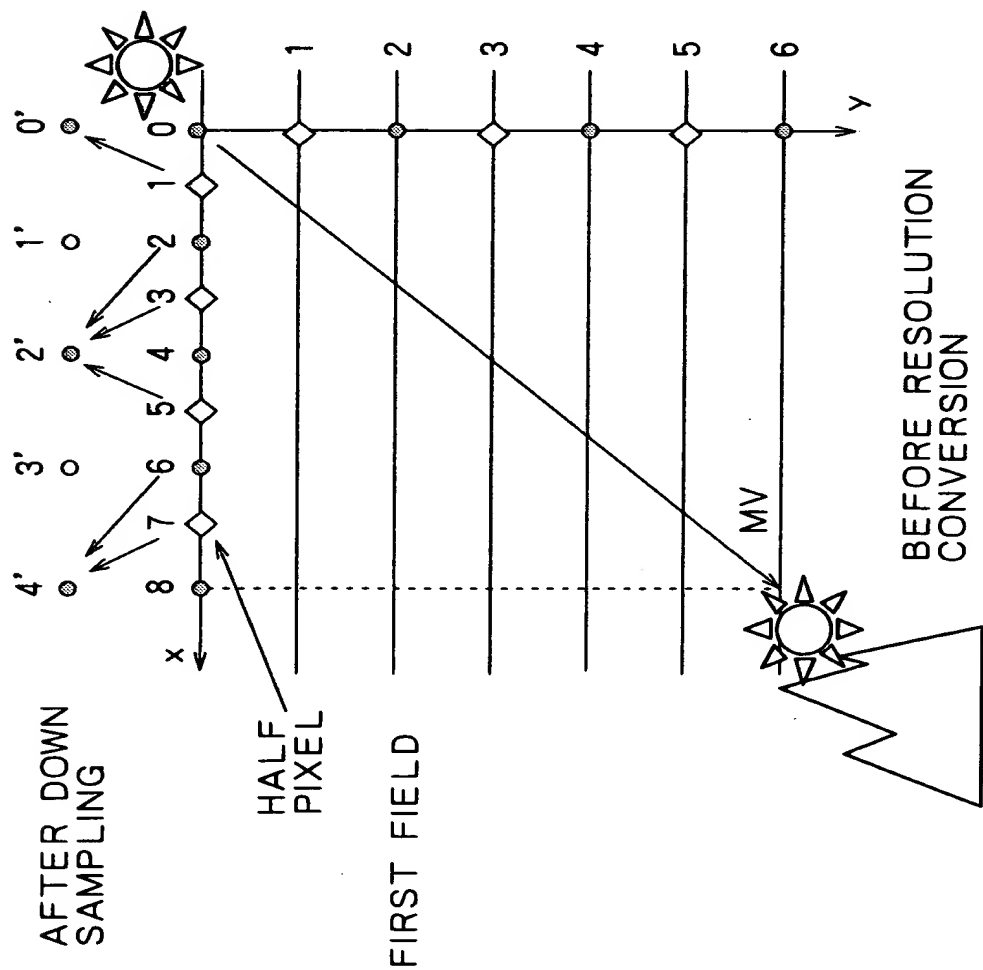
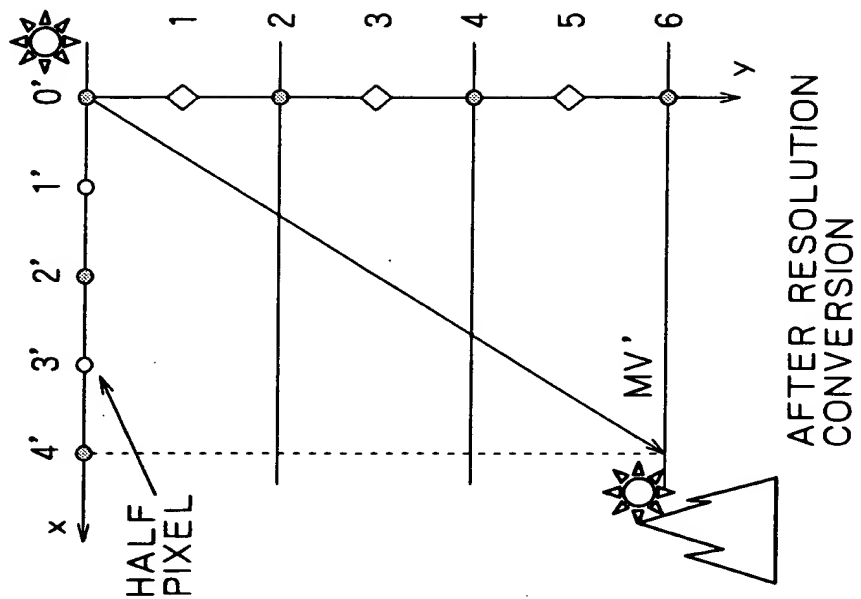


FIG. 19B



SINCE IMAGE ONLY OF EXTRACTED FIRST FIELD IS INPUTTED TO MPEG4 IMAGE CODING APPARATUS, FIRST IMAGE FIELD IS USED AS REFERENCE IMAGE FOR MPEG4. THEREFORE, 1 IS ADDED TO VERTICAL COMPONENTS OF MOTION VECTORS UPON PREDICTION OF SECOND FIELD OF MPEG2 TO APPROXIMATE SECOND FIELD TO FIRST FIELD

FIG. 20A

FIG. 20B

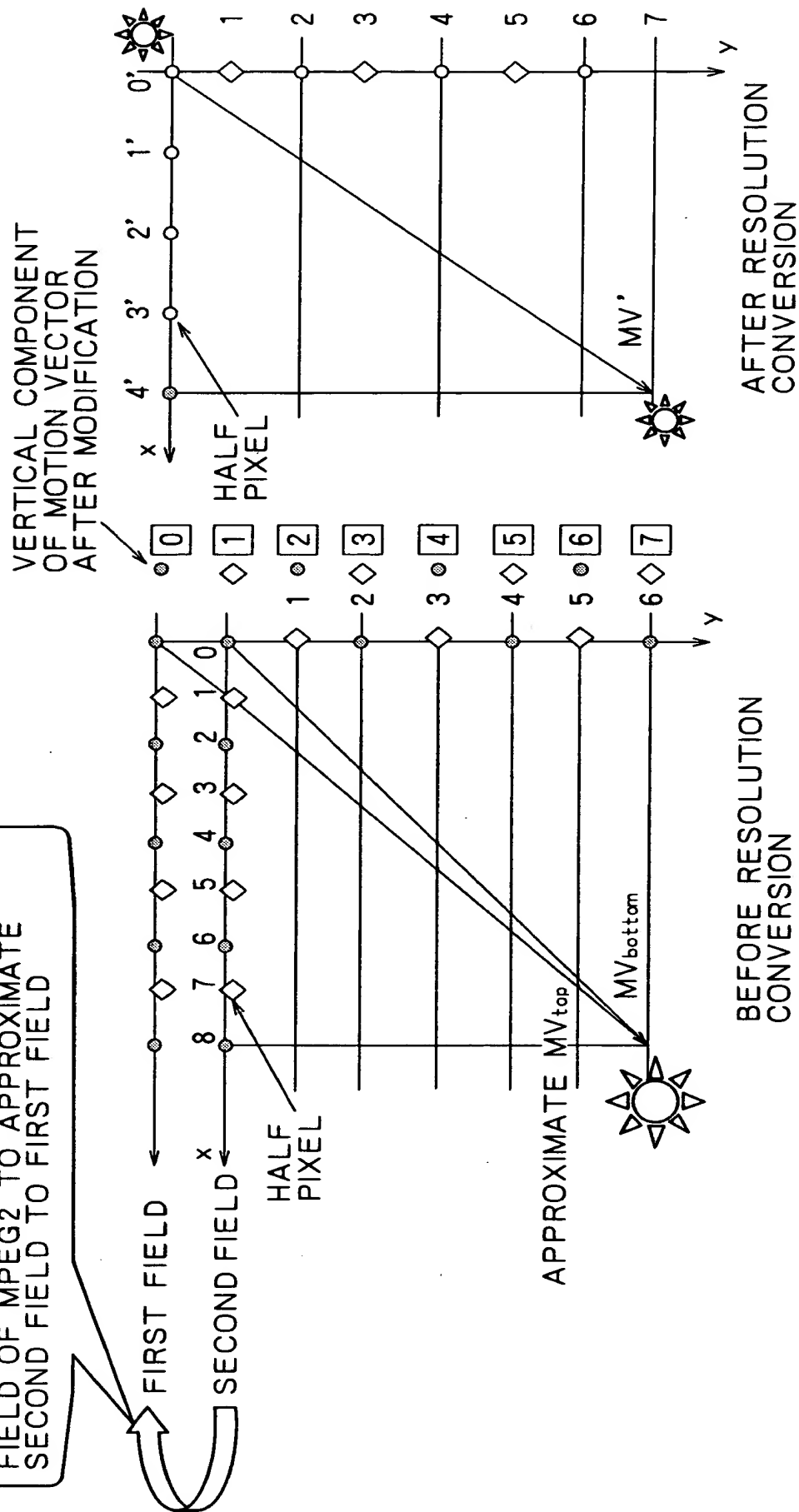


FIG. 21

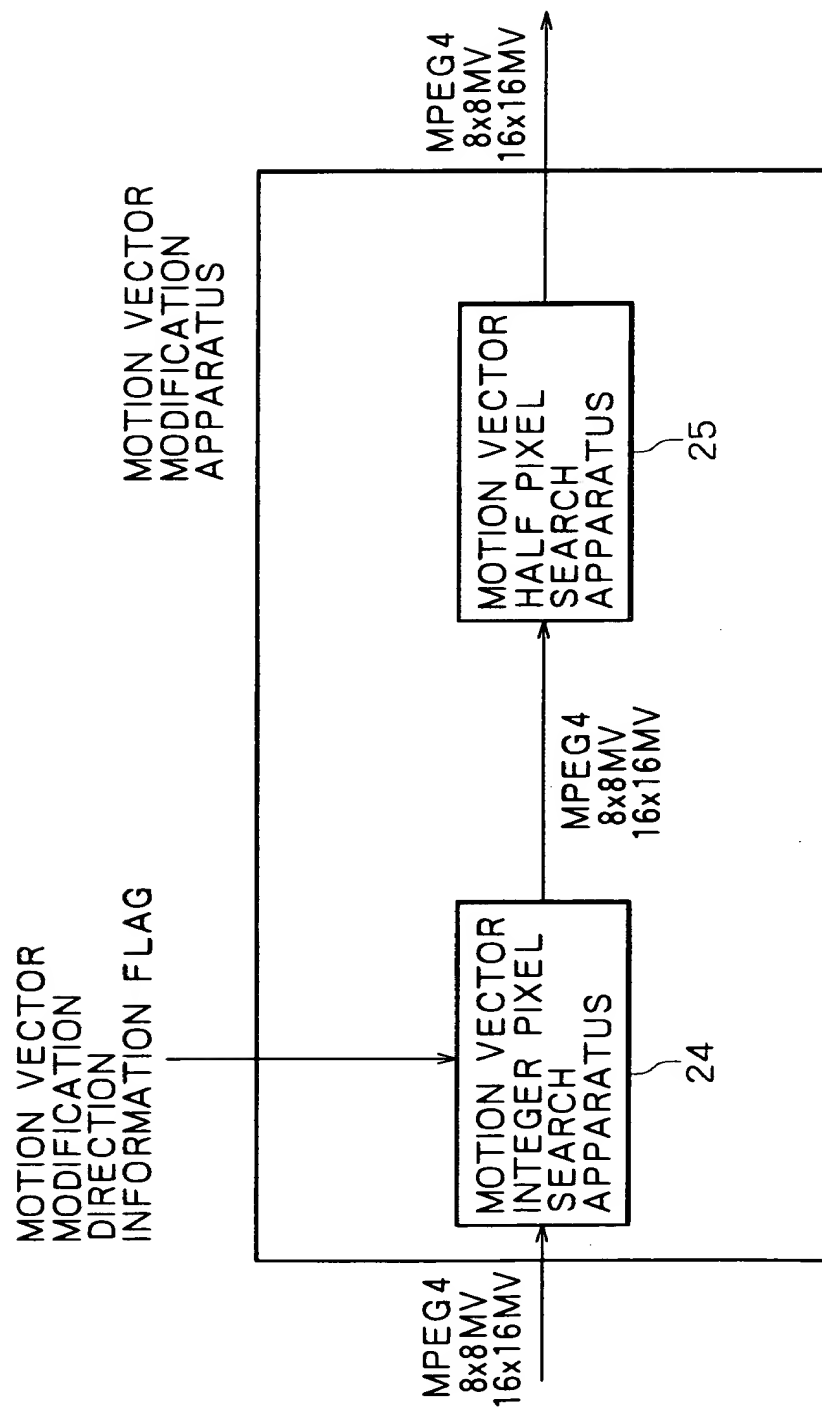
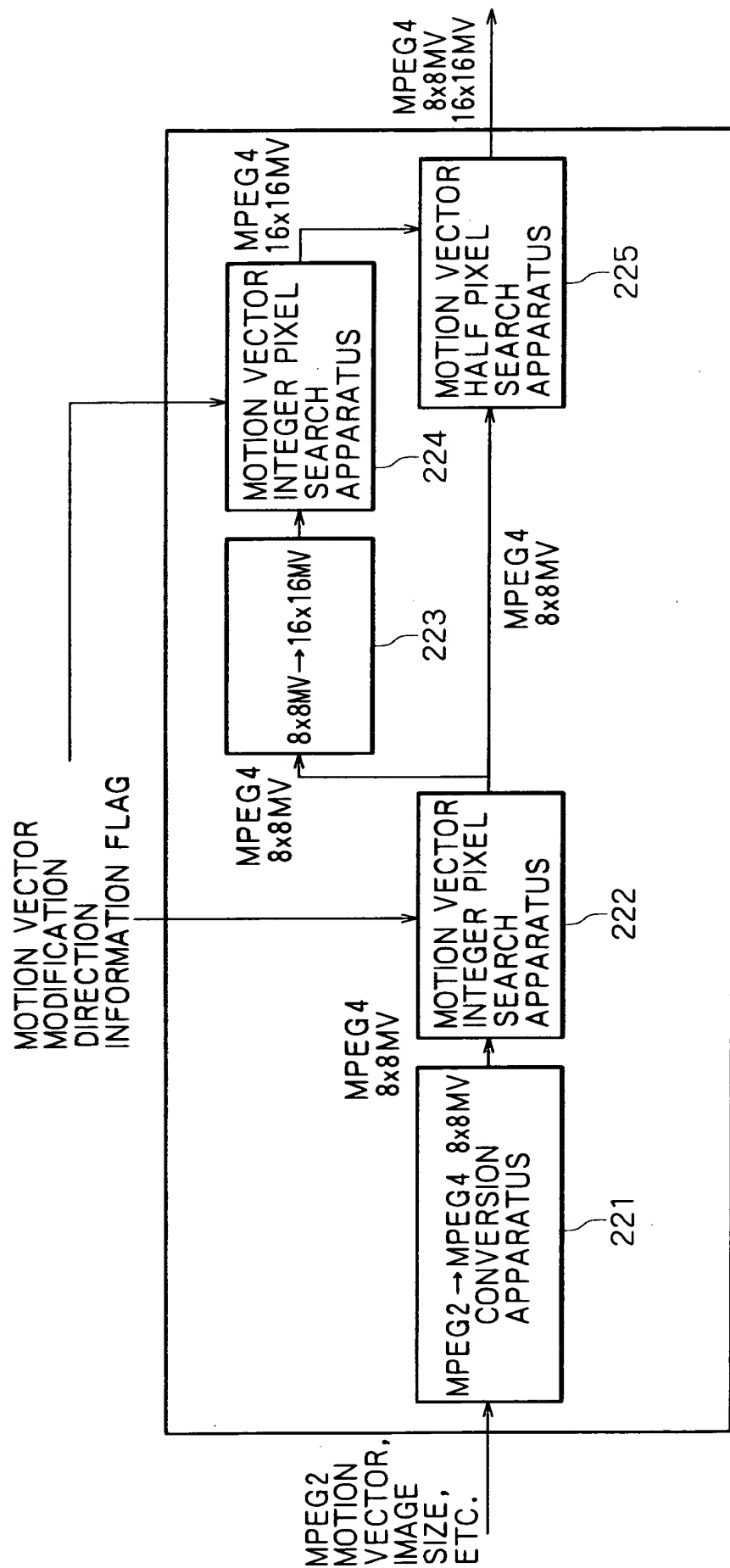


FIG. 22



- MPEG2 INTEGER PIXEL ● MPEG4 INTEGER PIXEL
- ◇ MPEG2 HALF PIXEL

FIG. 23A

MODIFICATION FROM MPEG2
INTEGER PIXEL TO MPEG4

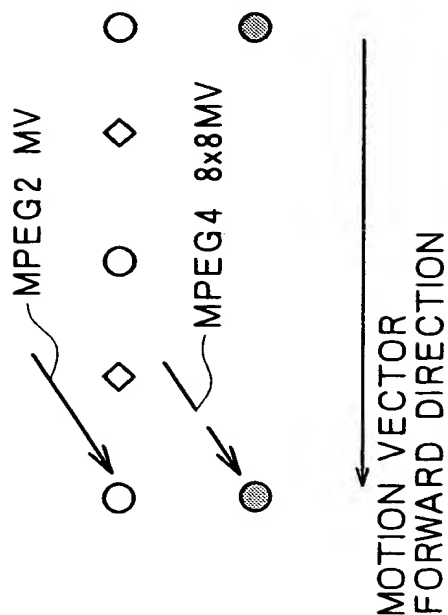
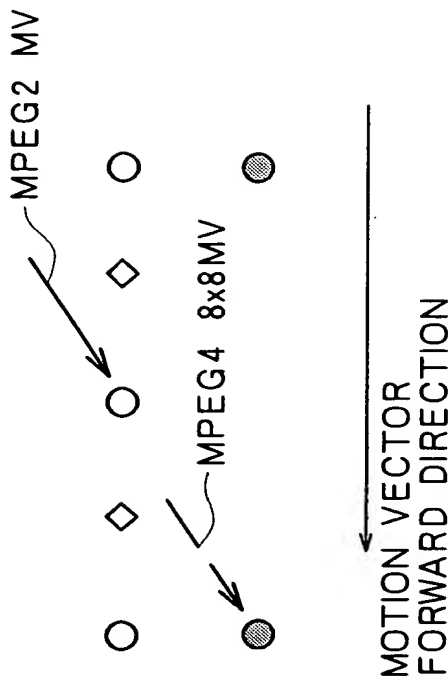


FIG. 23B

MODIFICATION FROM MPEG2 INTEGER
PIXEL TO MPEG4 INTEGER PIXEL
OF FORWARD DIRECTION

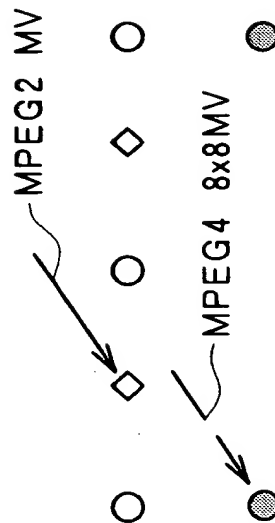


- MPEG2 INTEGER PIXEL ● MPEG4 INTEGER PIXEL
- ◇ MPEG2 HALF PIXEL

FIG. 24A

FIG. 24B

MODIFICATION FROM MPEG2 INTEGER
PIXEL TO MPEG4 INTEGER PIXEL
VALUE OF FORWARD DIRECTION



MODIFICATION FROM MPEG2 INTEGER
PIXEL TO MPEG4 INTEGER PIXEL
VALUE OF REVERSE DIRECTION

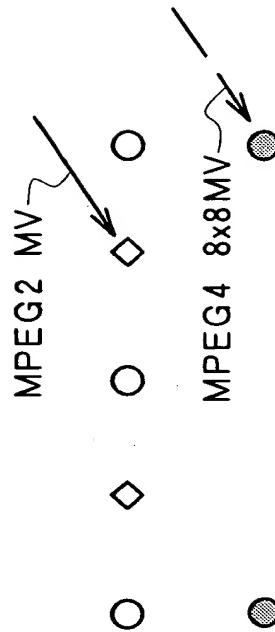
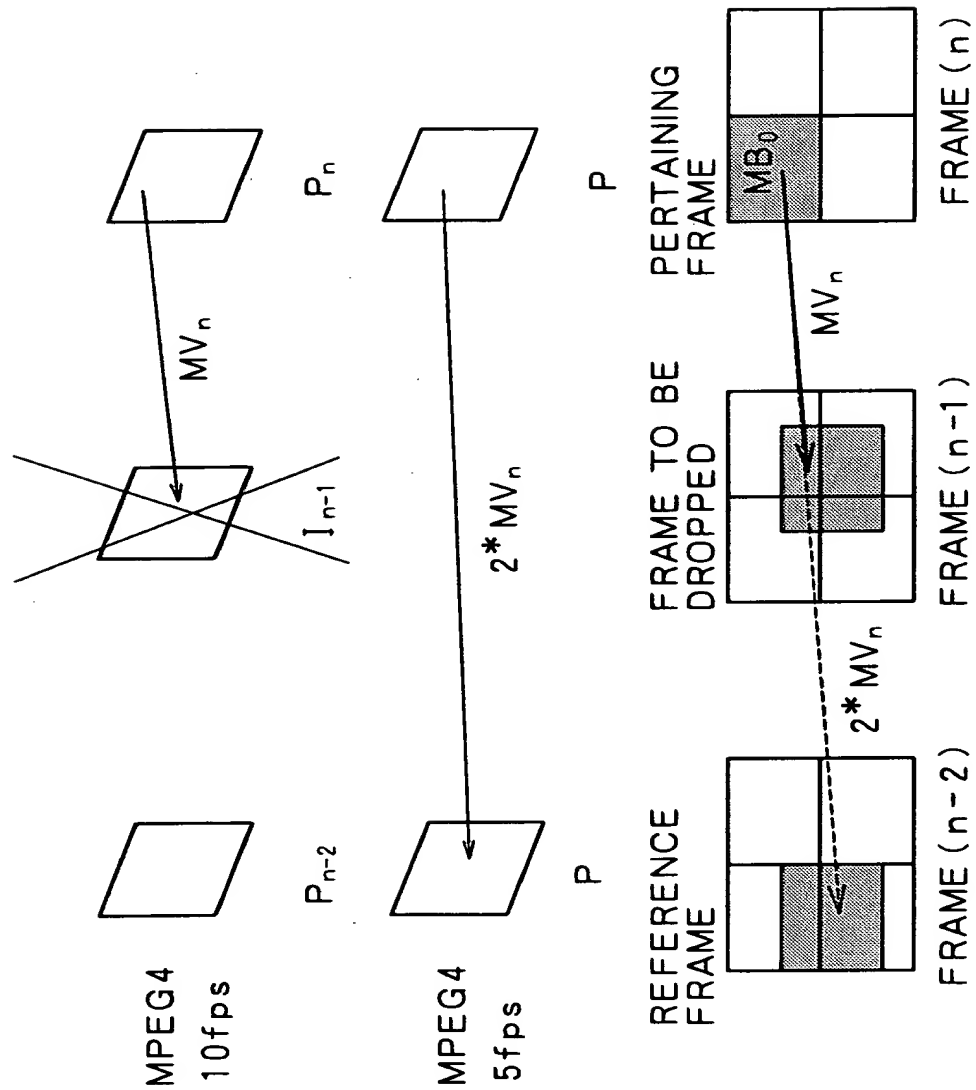


FIG. 26



EXTEND MOTION VECTOR TO TWICE LENGTH
TO PERFORM TEMPORAL MODIFICATION

FIG. 27

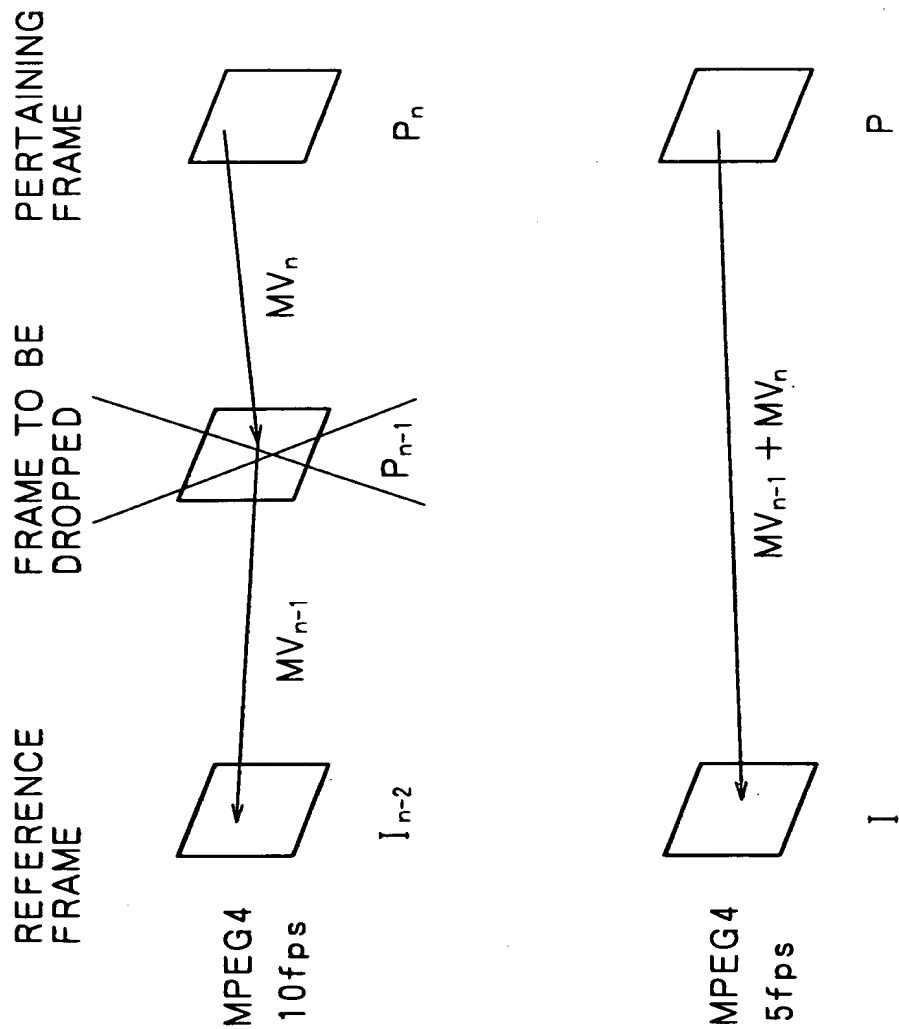
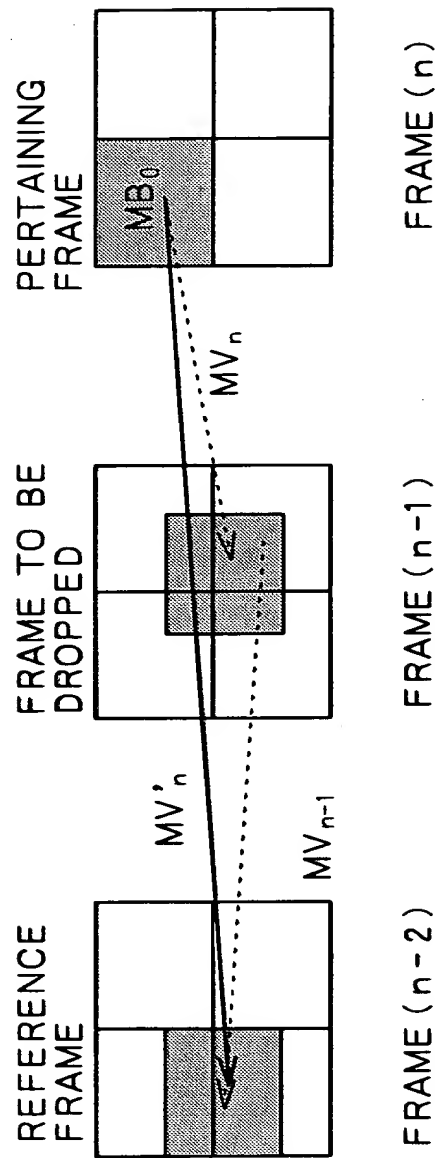


FIG. 28

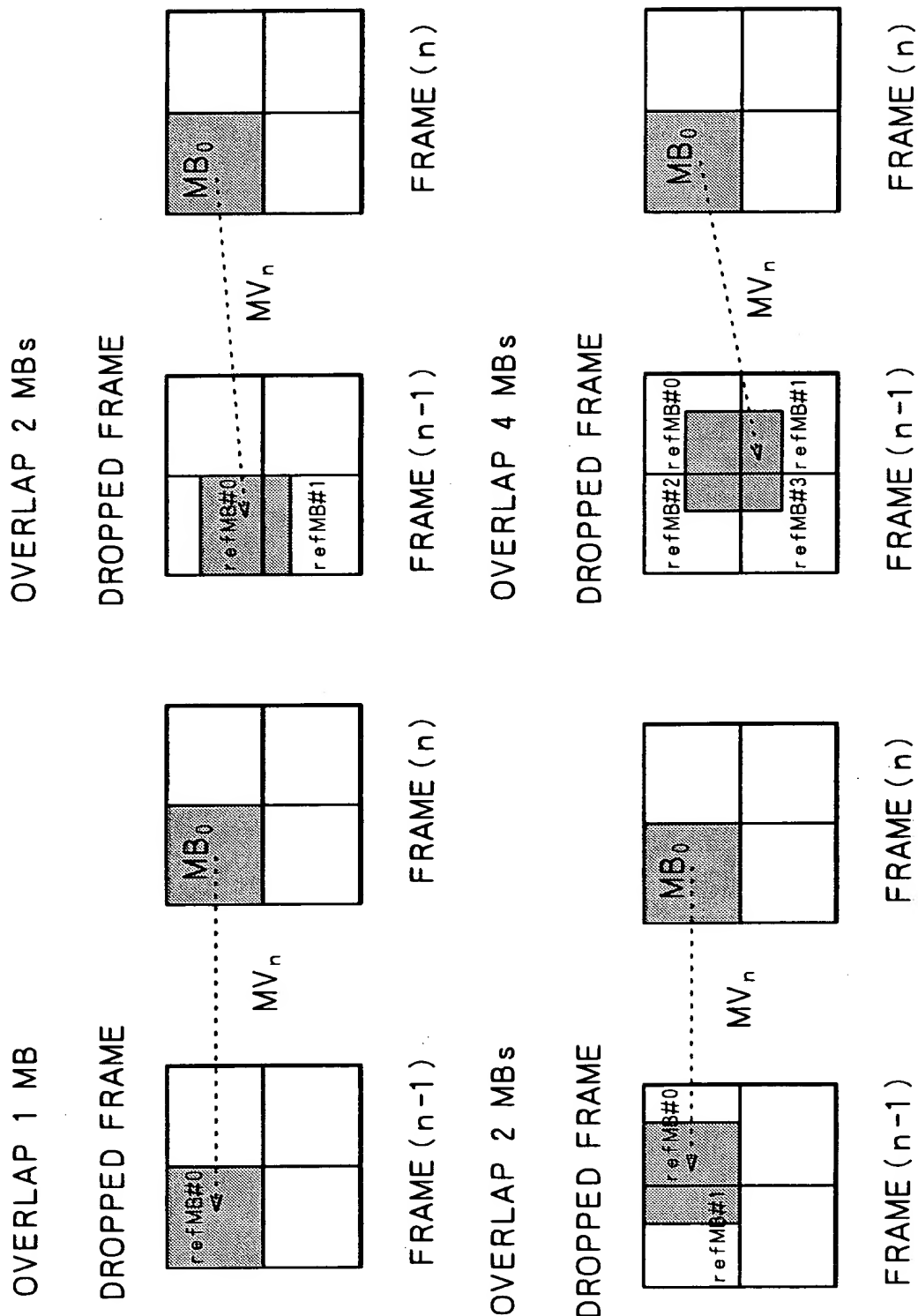


SELECT MV_{n-1} WHICH EXHIBITS MAXIMUM PARAMETER X
(WHERE X IS ONE OF THE FOLLOWINGS)

- MB overlapped area
- MB overlapped area/Coefbits
- MB overlapped area/Q-scale
- MB overlapped area/(Coefbits X Q-scale)

$$MV'_n = MV_n + MV_{n-1}$$

FIG. 29



OVERLAPPING MB (1, 2 OR 4MB)

FIG. 30

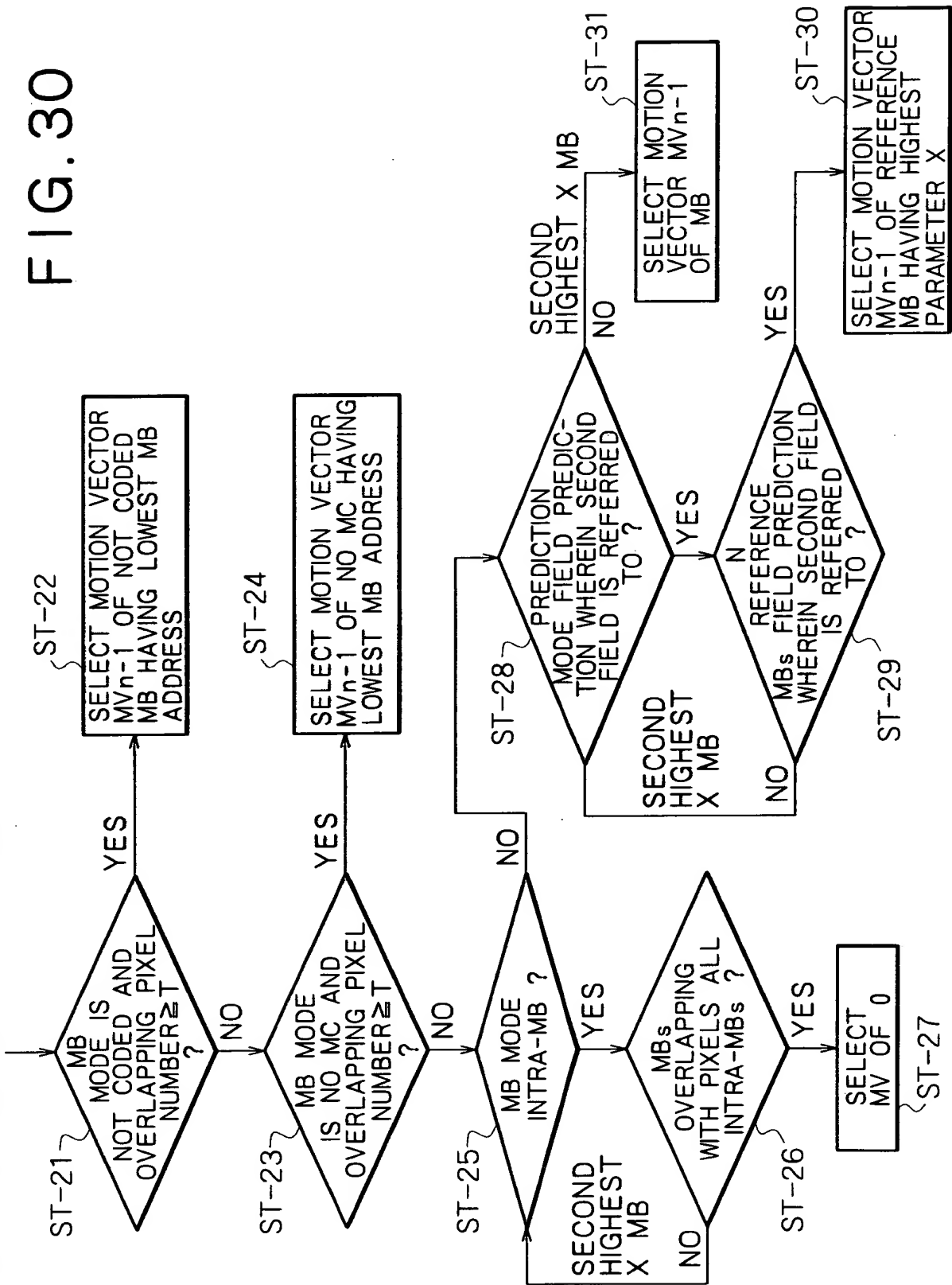


FIG. 31

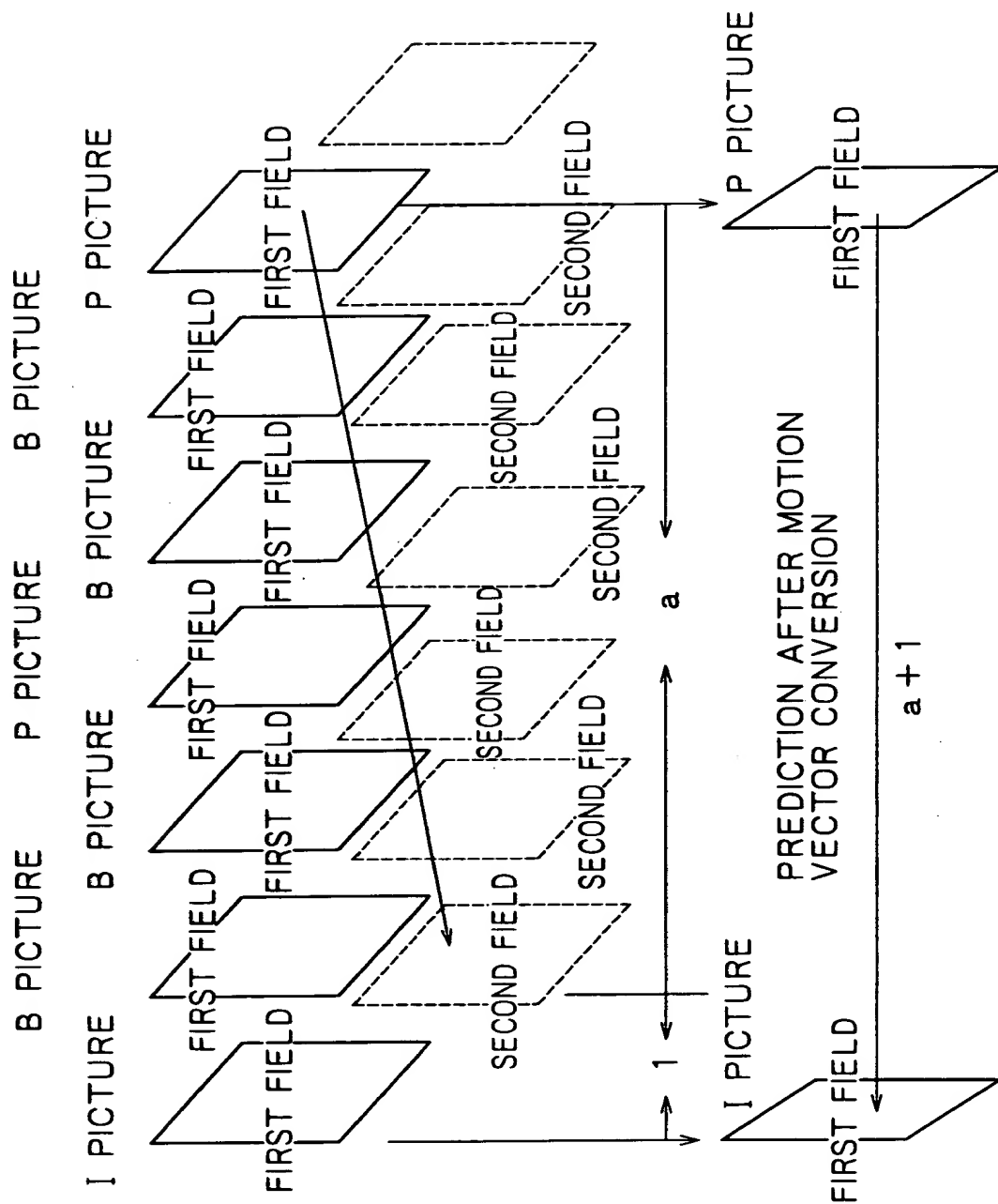


FIG. 32

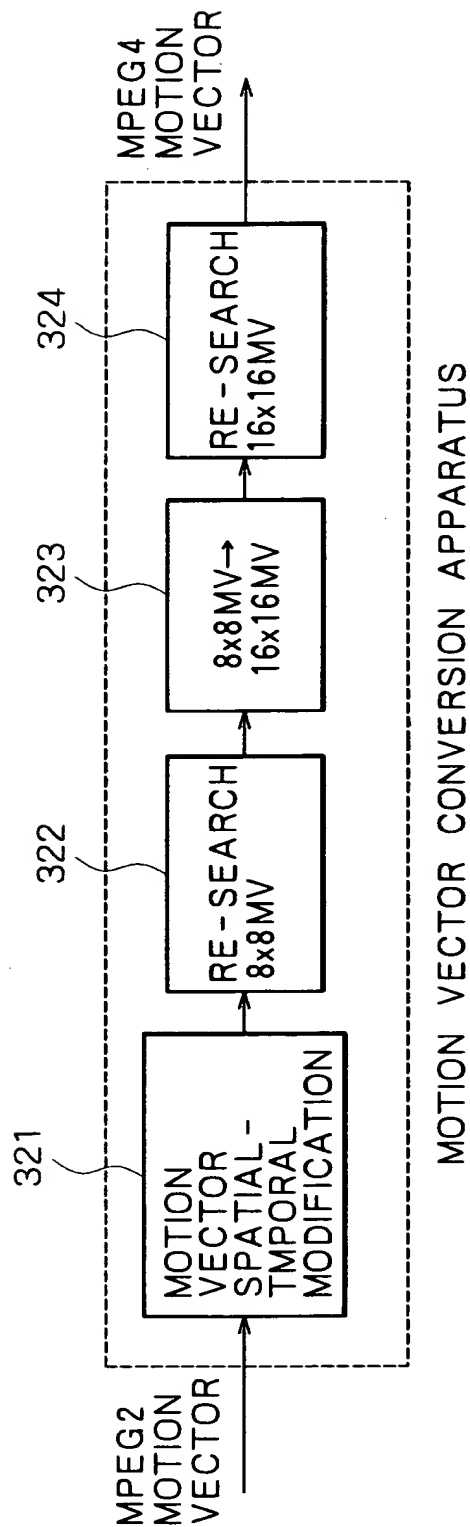
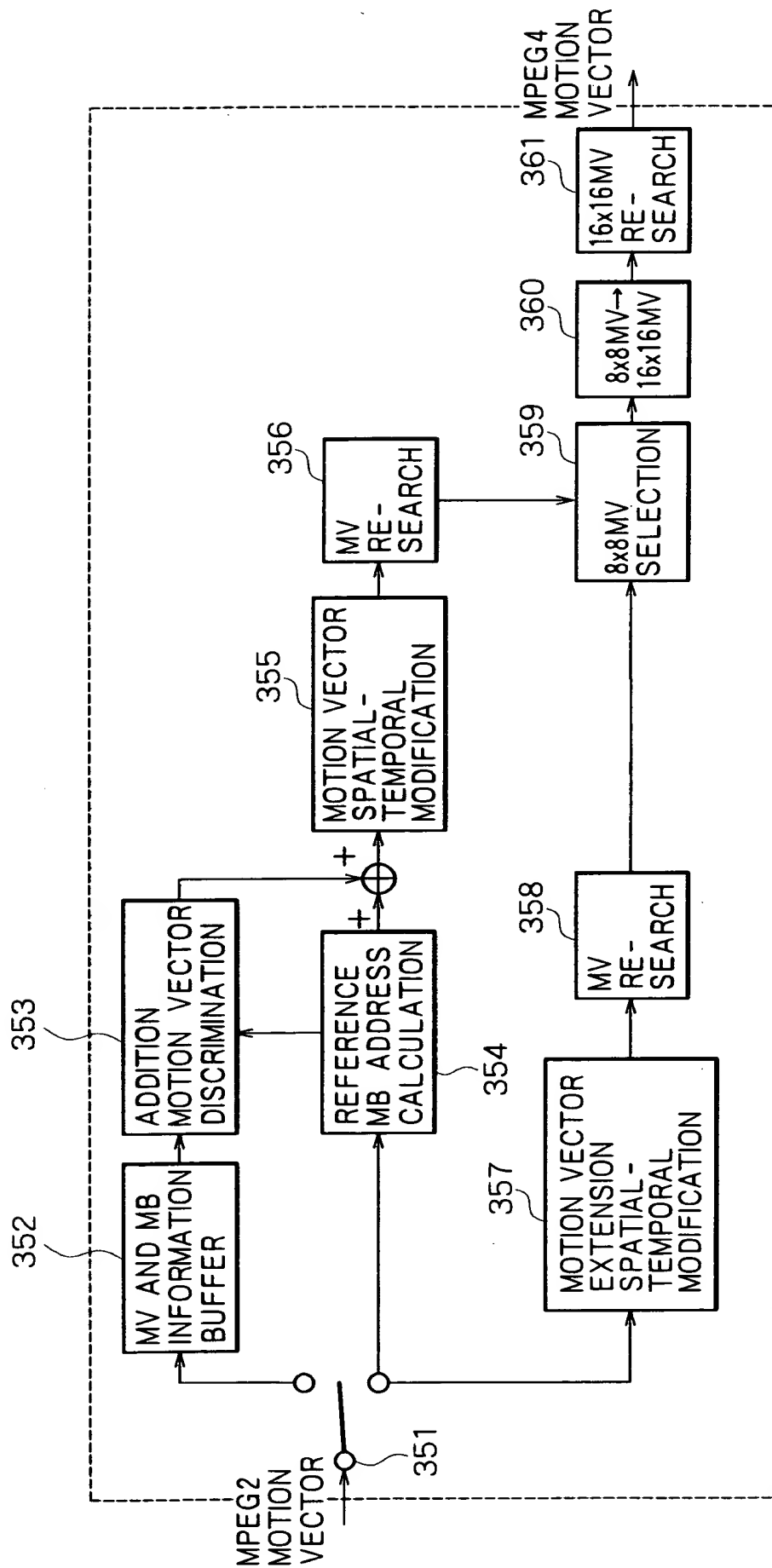
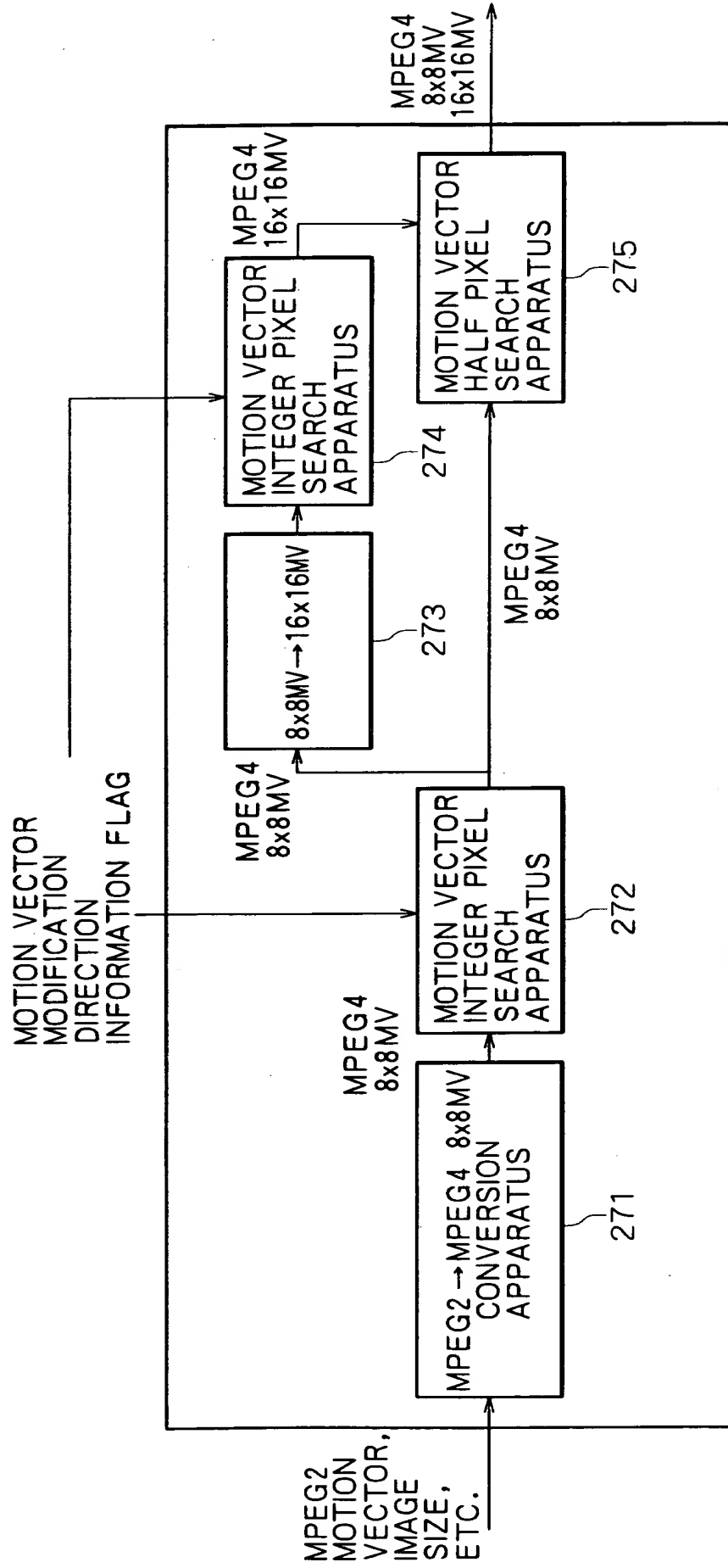


FIG. 33



MOTION VECTOR CONVERSION APPARATUS

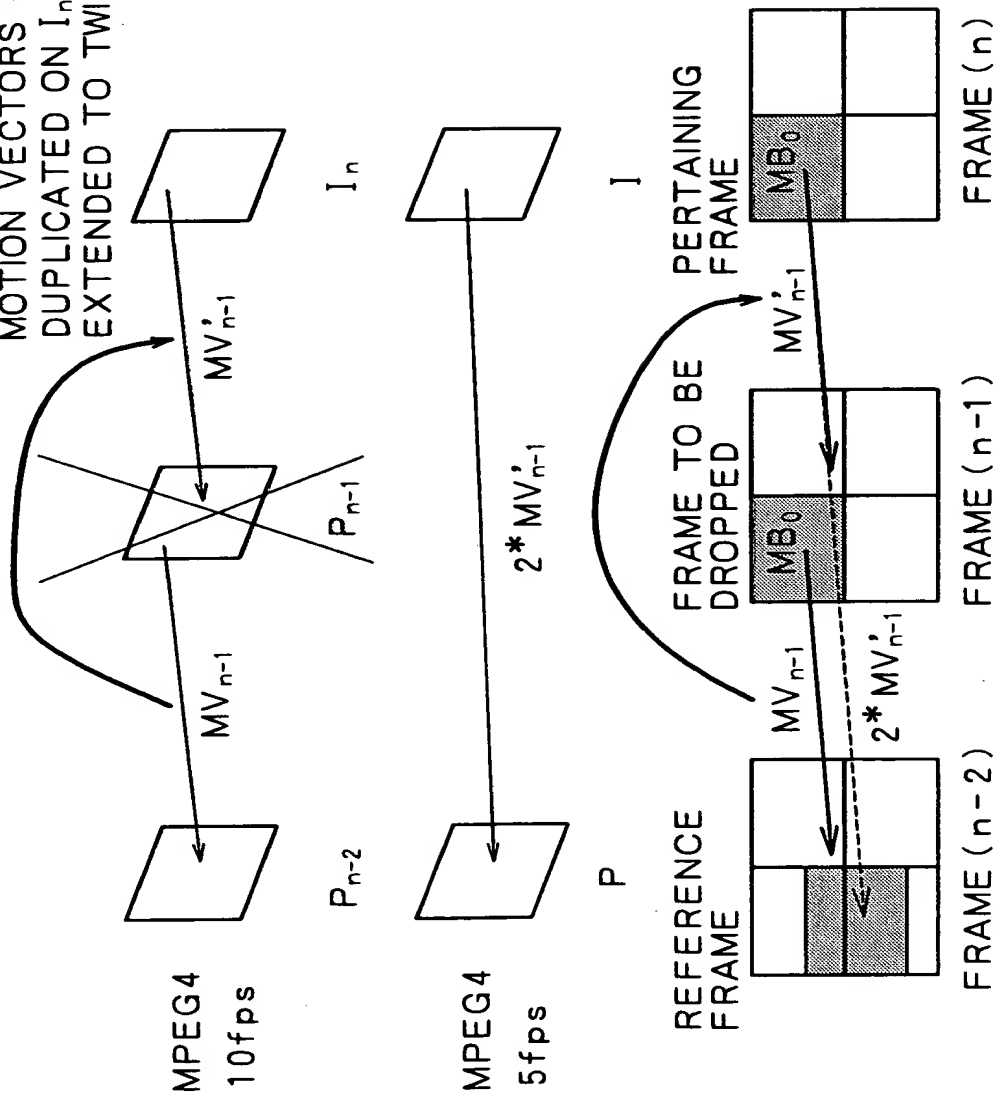
FIG. 34



MOTION VECTOR CONVERSION APPARATUS

FIG. 35

MOTION VECTORS OF P_{n-1} FRAME MB ARE
 DUPLICATED ON I_n MB AT THE SAME POSITIONS AND
 EXTENDED TO TWICE FOR TEMPORAL MODIFICATION



MV_{n-1} IS DUPLICATED AND EXTENDED
 TO TWICE FOR TEMPORAL MODIFICATION

FIG. 36

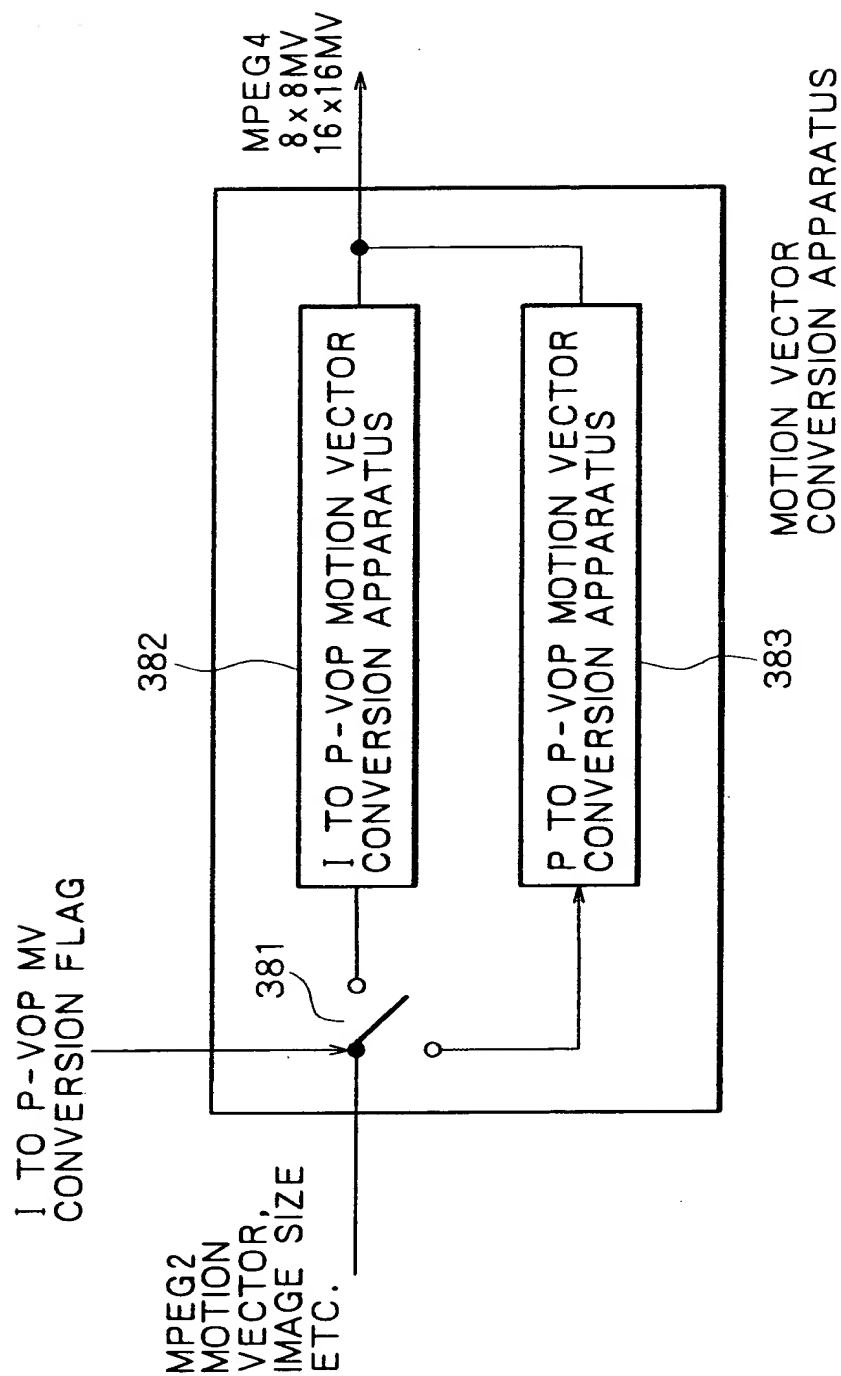
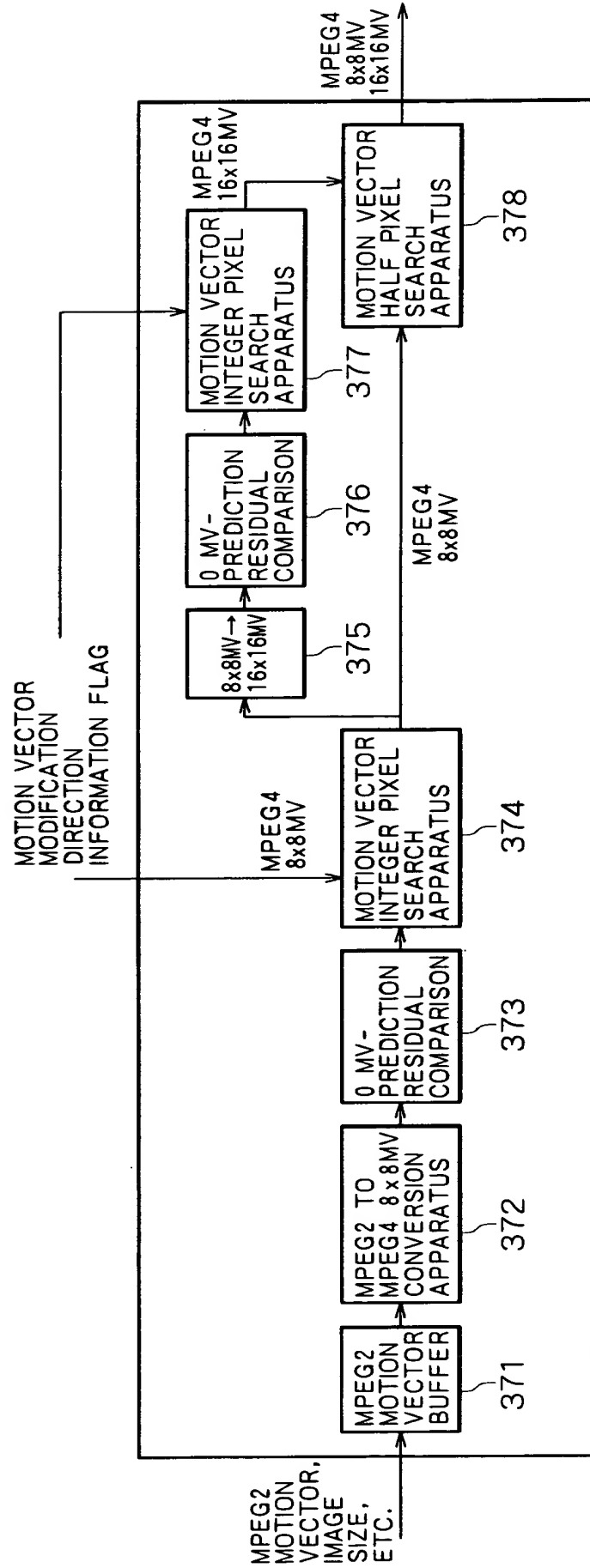


FIG. 37



I TO P MOTION VECTOR CONVERSION APPARATUS